

DESIGN OF DISTRICT CENTRES WITH
SPECIAL REFERENCE TO KAYOLE.

by

JAMES KAMAU KAROGI, B.Arch (HONS) Registered Architect

THIS THESIS HAS BEEN ACCEPTED FOR
THE DEGREE OF M.A. - 1982
AND A COPY MAY BE BORROWED IN THE
UNIVERSITY LIBRARY.

*A thesis submitted in part fulfilment for the
degree of Master of Arts in Architecture
in the Department of Architecture at the
University of Nairobi*

University of NAIROBI Library



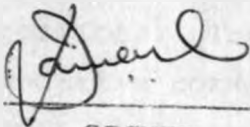
0356222 0

NAIROBI

1982

DECLARATION

I, JAMES KAMAU KAROGI, hereby declare that this thesis is my original work and has not been presented for a degree in any other University.



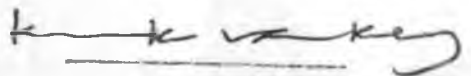
SIGNED

DECLARATION OF SUPERVISORS

This thesis has been submitted for examination with my approval as University Supervisor(s)



Professor A. Nevarlinna
Visiting Professor



Mr. Kurula Varkey
Senior Lecturer

(iii)

A C K N O W L E D G E M E N T S

I am indebted to many people both at the University of Nairobi and outside for their help in the writing of this study.

Dr. Hanjari, Chairman, Department of Architecture for both the interest and encouragement he has given me throughout the study.

My supervisors Professor Arne Nevanlinna and Kurula Varkey who made many valuable comments and suggestions. Their assistance especially the many provocative comments from both of them has done much to improve this study.

Bruce Creager for the many friendly and professional talks which have helped crystallise my thoughts in many aspects of architecture in general and of this research in particular.

To Dean's Committee for providing financial assistance.

To the Department of Architecture Postgraduate Studies Committee for the financial assistance I received from the Dunlop Award donated to the Department of Architecture.

To Miss Caroline Jura who typed this thesis from the written manuscript.

To Mrs. Jane Manasseh and Tony Pinto of City Hall for the information they made available to me.

And last but not least Mr. Boniface Mburu and Richard Muiruri who assisted me in draughting and in the final preparation of reduced drawings for binding.

A B S T R A C T

The main intention of this thesis is to establish design principles and evolve a design for Kayole District Centre within the North Eastern part of Nairobi city region. The design of Kayole District Centre should be seen as an evolution of design principles which can also be applied in designing other district centres now that decentralization of Nairobi City Centre is imminent.

The first chapter is a discussion of one of the major design determinants; the context within which Kayole district centre will grow. In this chapter the geographical placement of Kayole District Centre in respect to other surrounding urban centres has been analysed in an attempt to establish the catchment population it will serve at various strategic years. The first chapter also shows the correlation between the catchment population and the planned infrastructure. In this way it has been established that the planned infrastructure can support both Kayole District Centre and its catchment population for various strategic years.

Chapters two and three are case studies of two suburban centres, Westlands and Eastleigh. The intention in these two chapters is a critical study, in an attempt to discern the forces behind the functional zoning movement patterns, structure, and urban form of the two centres. Westlands and Eastleigh have been chosen because they cater for different income

groups and evolved from different urban cultures. Thus Westlands serves a high income group and is western in outlook. Eastleigh on the other hand serves a low income group and was an Asian settlement at its inception. In their nature the two case studies constitute a spectrum of the urban reality in Nairobi City region. The design determinants discerned in chapters two and three have been embodied in chapter four which is a conclusion of the case studies. In the fourth chapter as in the design, the more sensory determinants have been given greater emphasis.

Chapter five is the design of Kayole District Centre. As far as has been possible, the design incorporates what has been learned in the case studies. The centre is in two sectors. The main sector constitutes a majority of commercial, residential, social and administrative facilities. This sector is complete in itself and is the only sector that the design goes into detail. The second sector to the East has some major institutions and future extensions of commercial and residential activities of the Centre. The institutions in this sector are so specialized that it is beyond the scope of this thesis to design them to any detail. Only the required amounts of land has been set aside. Although the future commercial and residential activities have not been designed to any detail, the design principles used in the design of the first sector, to the West should apply.

TABLE OF CONTENTS

<u>ITEM</u>	<u>PAGE</u>
Thesis Title	(i)
Declaration	(ii)
Acknowledgement	(iii)
Abstract	(iv)
Table of Contents	(vi)
 CHAPTER I: LOCATION OF KAYOLE DISTRICT CENTRE	
Locational Context	1
Structure Plan	6
Catchment Population.....	11
Sewage	16
Water Supply	19
Communication	22
 CHAPTER II: WESTLANDS CASE STUDY	
Functional Zoning	29
Movement Pattern, Structure and Parking	43
Built Form and Townscape	49
 CHAPTER III: EASTLEIGH CASE STUDY	
Functional Zoning	71
Movement Pattern, Structure and Parking	81
Built Form and Townscape	100
 CHAPTER IV: CONCLUSIONS TO CASE STUDIES	
Functional Zoning	142
Movement Pattern, Structure and Parking	146
Built Form and Townscape	148

<u>ITEM</u>	<u>PAGE</u>
CHAPTER V: DESIGN OF KAYOLE DISTRICT CENTRE	
Brief	156
Design Principles	172
Design Presentation	179
BIBLIOGRAPHY	186

CHAPTER I

LOCATION OF KAYOLE DISTRICT CENTRE

LOCATIONAL CONTEXT

The idea of a district centre for the eastern extension was first suggested by the metropolitan growth strategy report 1973, which having identified the eastern region as a major growth cluster suggested that its growth can best be handled by providing a district centre to act as a nucleus for growth. The district centre was intended to act as a nucleus for growth, act as a major employment centre and provide for a majority of social and administrative facilities. This was a major proposal within the report whose validity has since been established. The proposal by the MGS report must be seen as my point of departure in this part of the study into issues of location of the centre and its feasibility.

To understand the impact on development of the eastern region due to the introduction of a district centre, it is important to appreciate the distribution of such centres around the region. Figure 1 indicates all the significant centres and their precise location in respect to the eastern extension. Their radius of influence has also been indicated. The radius of influence has been developed by considering these centres as retail outlets only. It must be noted however, that Nairobi CBD is a shopping centre of a national importance and locally acts on the catchment population for the different centres especially for specialised shopping activities. It has not been

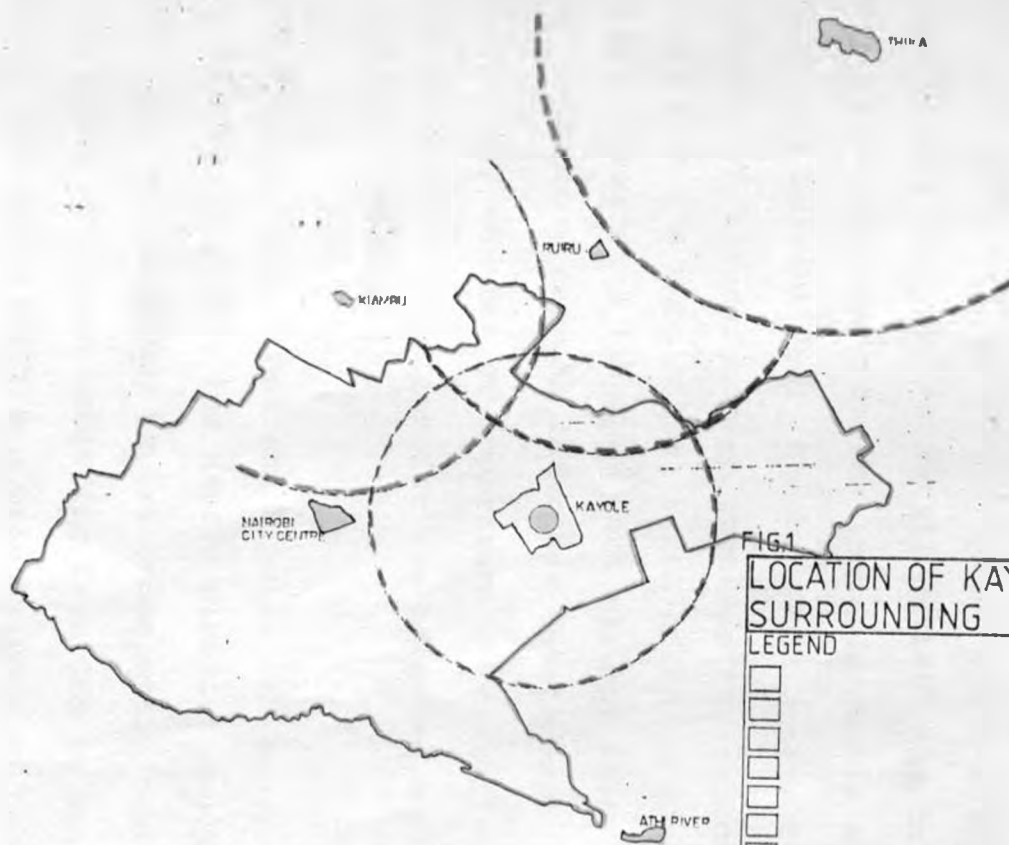


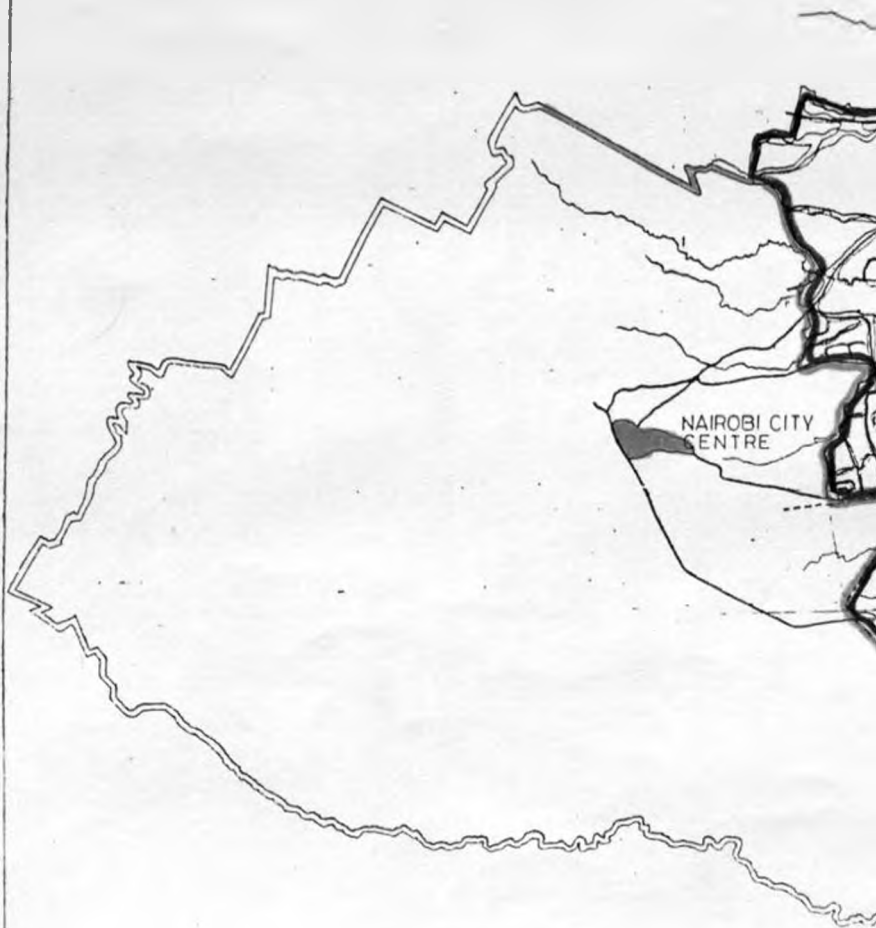
FIG. 1
LOCATION OF KAYOLE IN RELATION TO
SURROUNDING CENTRES

LEGEND

-
-
-
-
-
-
-
-

Possible to indicate the radius of influence of Athi river because it serves such a scanty population that its influence is only of significance to a population within it or that passing through it. Although the radius of influence for Thika has been indicated its location is so removed that its radius of influence has no overlap with that of the proposed centre. As retail outlets the only centres which have an impact on the proposed centre are Kiambu, Ruiru, and Nairobi CBD. Kiambu would appear to be close to the eastern extension such that one may expect that it could serve the population North of Thika road. This is not so. Poor road linkages work against this. Given the existing road network and other development constraints the only centres of importance in establishing the ultimate catchment population for the proposed centre are Ruiru and CBD, Nairobi.

Figure 2 goes further than 1 and establishes the geographic distribution of the catchment for Kayole district centre. This has been done by accepting the recommendation that within the corridor of growth extending from CBD to Ruiru, the CBD, Kayole and Ruiru perform a primary role of providing for commercial, employment, administrative and cultural facilities to the population within the corridor. What is more, I have assumed that the three centres can be developed to the extent that the level of provision of these facilities is comparable. The only influencing factor then to the distribution of catchment population to each one of the centres is the relative geographical placement of population in respect to the three centres. It is



NAIROBI AREA

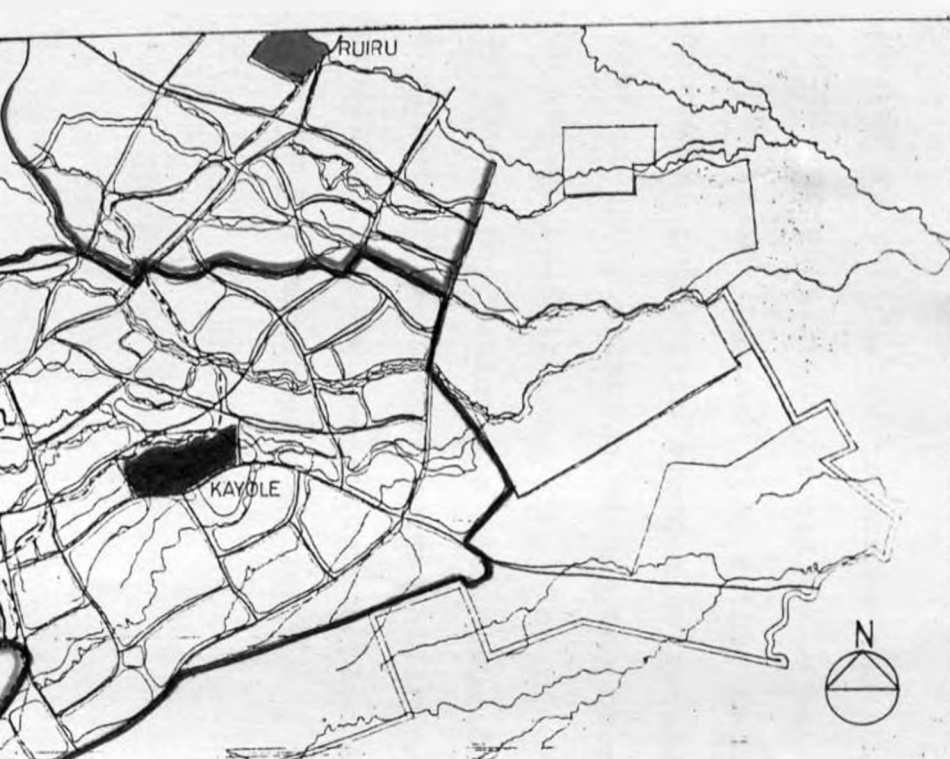





FIG 2

CATCHMENT AREA FOR THE PROPOSED
KAYOLE DISTRICT CENTRE-AD 2000

LEGEND

-  Catchment area for Kayole
-  Part catchment area for Ruiru
-  Extent of Nairobi city centre catchment area to the East

- 
- 
- 
- 

SCALE 

therefore reasonable to assume that Kayole will serve catchment population of all those people who will consider Kayole nearer to them than either CBD and Ruiru. The catchment population emerges as indicated in Fig 2. The rest of the population within the corridor of growth will be served by Ruiru and CBD. The distribution of the catchment population has also assumed a very developed road network such that accessibility will not be a major problem. This as the structure plan indicates, is the goal by the target year AD 2000.

STRUCTURE PLAN

Figure 3 gives a summary of the structure plan for the Eastern Extensions. The main features are that to the south the extension is limited by Jomo Kenyatta airport. To the east both Dandora and Ruiru sewage plants and the irrigation areas proposed limit the extension. To the North Agricultural land mainly coffee farms forms the major constraint. The extension is therefore towards the North East mostly on ranching and sisal farms whose agricultural potential is not regarded as very crucial. The mode of extension largely corresponds to the corridor of growth as suggested by MGS report 1973.

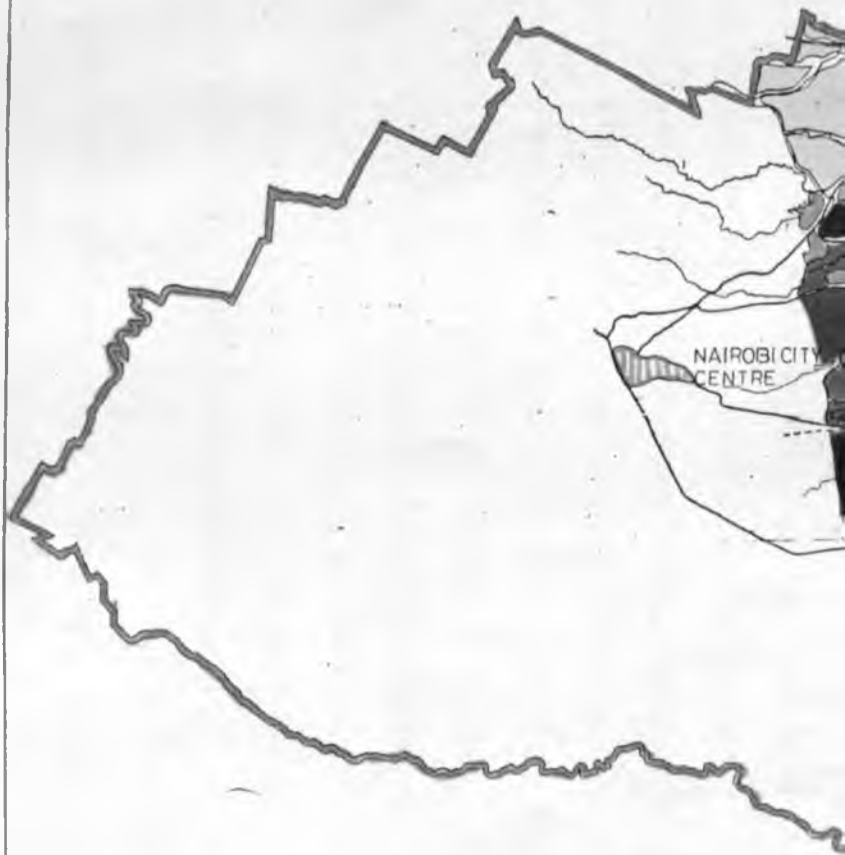
In locating the population the structure plan has adopted a further recommendation by the MGS report, that the majority of low income population be located near the work places ie the industrial areas and commercial centres. This will enable the majority of the population to walk to work, thus reducing traffic congestion and saving on their meagre resources. Distribution of population according to social - economic classification as proposed cannot be contested because it appears to have been derived from what is actually happening as opposed to what is intended to happen.

The normal tendency in land economics of placing land near urban core at a premium seems to have been reversed by locating low income population adjacent

to commercial centres. To my mind this is a more positive planning attitude for it derives from the welfare of the community and not the forces of land market.

Another aspect of the structure plan worthy of note is the location of commercial centres in proximity to industrial areas. This as existing relationship between the CBD and its industrial area indicate is very fortunate. A concentration of employment is implied especially so when the majority of the industries are intended to be labour intensive. Commercial activities at proposed commercial centres are bound to be substantially enhanced while at the same time commercial centres will provide support facilities like offices sale outlets etc. to the industries. Proximity of commercial centres to industries imply a concentration of vehicular traffic. Congestion implied can be solved through careful planning.

The land within the Eastern extention was formerly white owned farms. A majority of farms are changing hands many of the farms being bought by co-operatives. Such two co-operatives exist in Gitathuru valley. The danger here is that these co-operatives allow their members to build shanties on alloted plots without any regards to development control standards. The policy adopted by the authorities is to upgrade such settlements by providing sewage and water.



NAIROBI AREA



1
00
1

The government own a few plots while the majority of the plots are privately owned. The fact that most of the plots are large will facilitate rapid development due to easier compulsory acquisition where this may be necessary. More than half of the area planned for the district centre is owned by the government although the land is held in trust for the government by Nairobi City Council. The remaining four plots are privately owned. The major activity on these plots is quarrying. The development of the centre could begin on the government land while process of acquiring the other plots continue.

The topography of the Eastern Extension comprise of flat plains bisected by a series of rivers, Ngong, Nairobi Ruiru and Thiririka. The soil condition in this area is generally black cotton with an average depth of 0.8 m. The area along Ngong river is subjected to floods during heavy rains. The flood water level extends to 100 meters on either side of the river. Within this limits the area adjacent to Ngong river is not suitable for development. A significant disfiguring of the topography in the form of quarries has taken place in this area. Large developments may be hindered both by the nuisance created by quarrying and the problem of infilling or levelling that quarrying creates.

The structure plan and this brief commentary gives the anticipated development of the Eastern area in general terms. Perhaps it is best that in establishing the feasibility of the proposed district centre I look at specific

issues. AD 1985 and AD 2000 have been used as strategic years in dealing with specific issues. This is because the metropolitan growth strategy, the largest planning study since 1930's developed its report based on strategic years, 1979, 1985, and 2000. Their data and projections are based on these strategic years. It is only sensible that the feasibility of the district centre be made along these strategic years. AD 2000 is especially important because it is intended that given the resources of Nairobi City region no more expansion will be possible after AD 2000. It has been made a clear intention that any additional growth in population for Nairobi City region will be located in other towns in the country or in towns which would serve as counter magnets to Nairobi like Athi River.

CATCHMENT POPULATION

1985

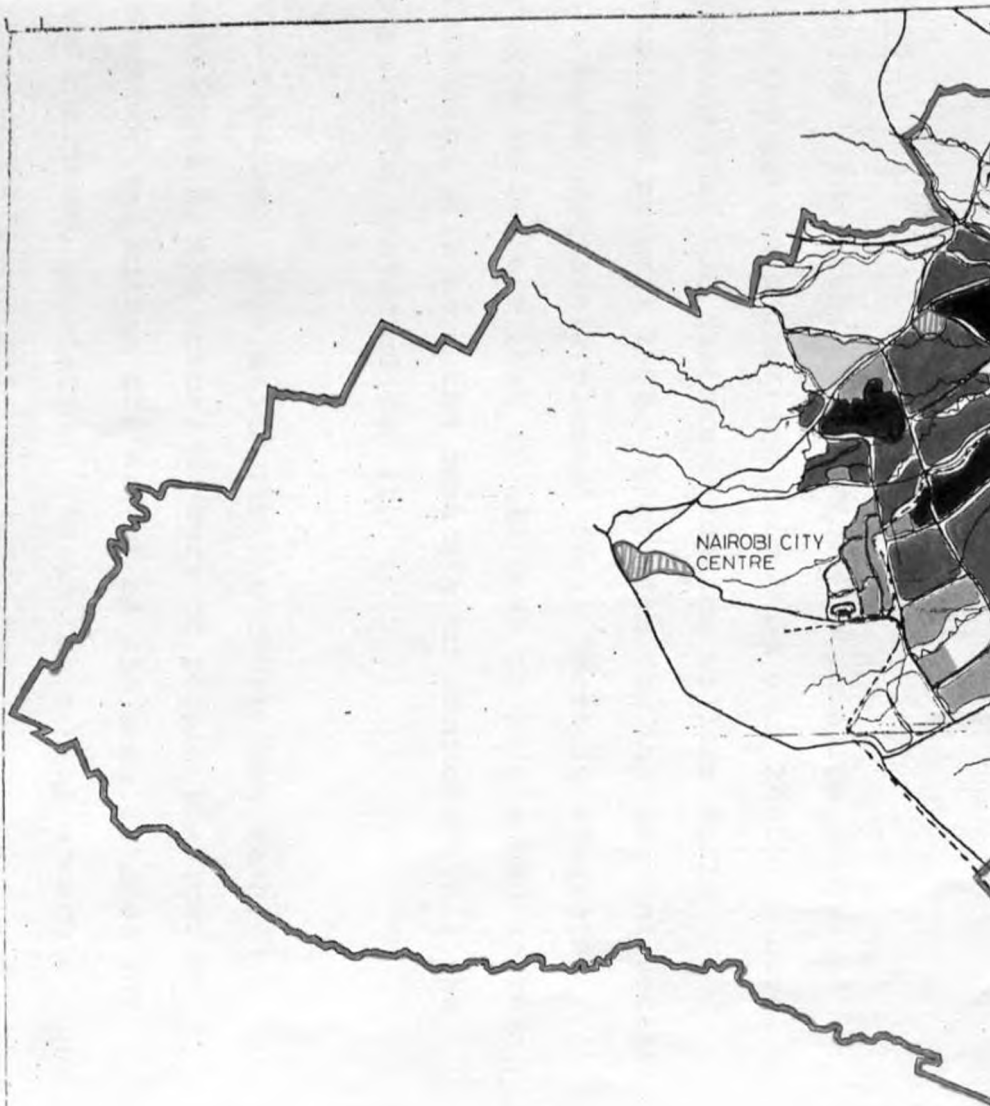
1979 population census has been used to derive the catchment population as of today. This is the population so placed that the proposed location of the centre would best serve their needs. The catchment population today would be about 276,266 people ¹. Assuming a 4% rate of growth by fertility the catchment population will be 351203 by 1985. Through additional committed housing developments as tabulated below², the additional population will be 512,5000. The total catchment

1. The catchment population include the following wards as per 1979 census.

No.	Ward	Population	No	Ward	Population
12	Industrial area	9,016	24	UHURU	23,5800
14	Embakasi	13,422	36	ROYSAMBU	30,029
15	Dandora	23,422	37	RUARAKA/ KASSARANI	29,844
16.	Harambee	16,629	38	KARIOBANGI	43,252
17	Lumumba	13,410	39	MATHARE (Part)	34,846
18.	Makadara	11,943	40	EASTLEIGH (Part)	<u>25,874</u>
TOTAL CATCHMENT POP (1979)					276,266

2. Additional committed developments whose completion is expected before 1985.

AREA	POPULATION	AREA	POPULATION
SALOPIA	20,000	UMCJA (Phase 2)	40,000
KASSARANI SOUTH	20,000	KAYOLE (" 1&2)	170,000
VILLA FRANCA	70,000	DANDORA (" 2&3)	40,000
EMBAKASI	110,000	SOUTH KARIOBANGI	12,500
DONHOLM (Phase2)	30,000		
TOTAL POP			512,500



NAIROBI AREA

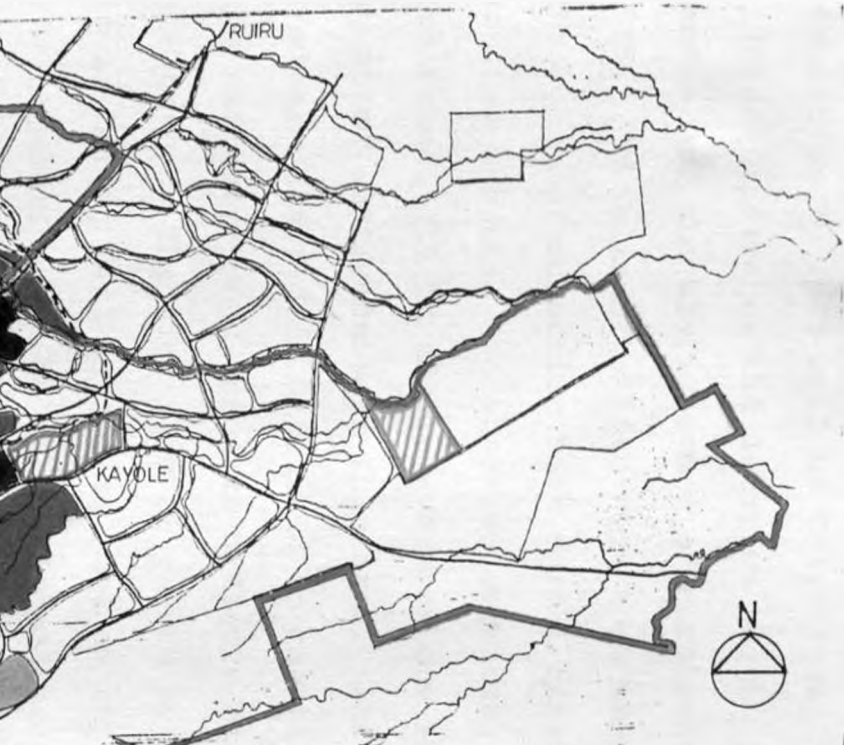


FIG 4
KAYOLE DISTRICT CENTRE
CATCHMENT POPULATION - AD 1985
LEGEND see fig.3

□
□
□
□
□
□
□
□
□
□
□



population by 1985 will be 863,703 say 900,000 people. Figure 4 indicates the location of the proposed district centre and the distribution of catchment population by 1985. It is important to note that only developments through planned action both formal housing, site and service schemes, and squatter upgrading have been indicated. It is imperative that one expects substantial squatter settlements in this area. The population increase implied is difficult to quantify but may force the catchment population to a figure higher than has been projected. The high rate of growth by fertility assumed, it is hoped, will offset to some extent the unaccounted for population growth through squatter settlements.

2000

Figure 5 indicates the catchment population projected for the proposed district centre by year 2000. I have assumed that the Eastern Extension will be fully developed by year 2000. Provision for the infrastructure has been adequately planned for. There is adequate reason to believe that if all goes on as planned Eastern Extension will have the capacity to accommodate all the population projected for it.

The catchment population for the centre has been developed by the actual numbers of people that can be accommodated within the extent of the area defined for the catchment population. Given the social economic population distribution as indicated in figure 5 and assuming gross densities of 250,100, 30 P/H for low, middle and high income, the ultimate catchment population



NAIROBI AREA

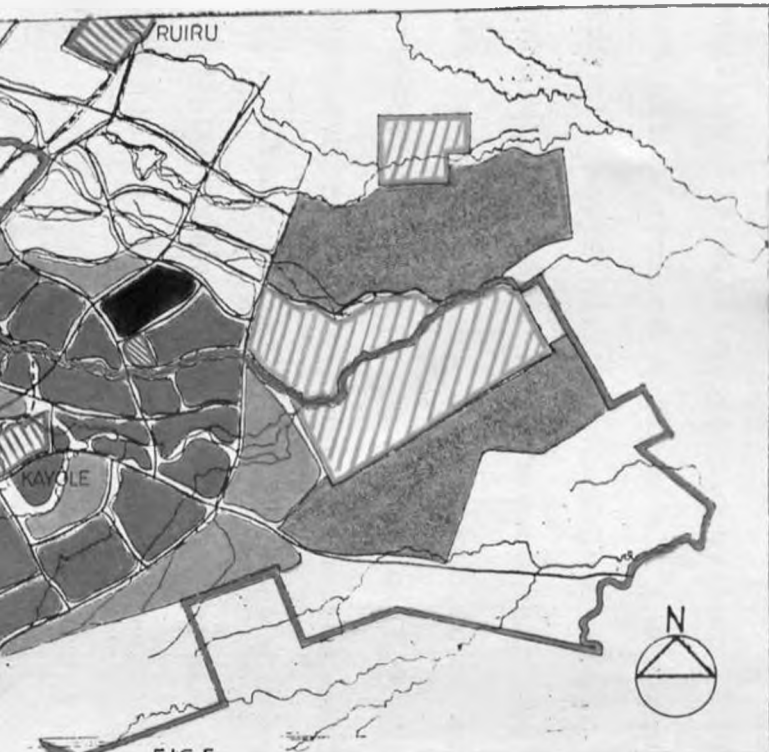
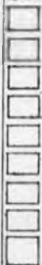


FIG.5

KAYOLE DISTRICT CENTRE
CATCHMENT POPULATION-AD 2000

LEGEND see fig 3



SCALE  0 1 2 3 4KM

will be 1.8 million people by year 2000. The gross densities applied include all the community facilities, Schools hospitals Neighbourhood shops, open spaces etc., Once more it must be stressed that the squatter settlements has not been taken into account. The figure projected may well be more than 2.0 million by 2000 if population growth through squatter settlements is allowed for. There is sufficient evidence to conclude therefore that the proposed centre will serve a population of about 2.0 million by the year 2000.

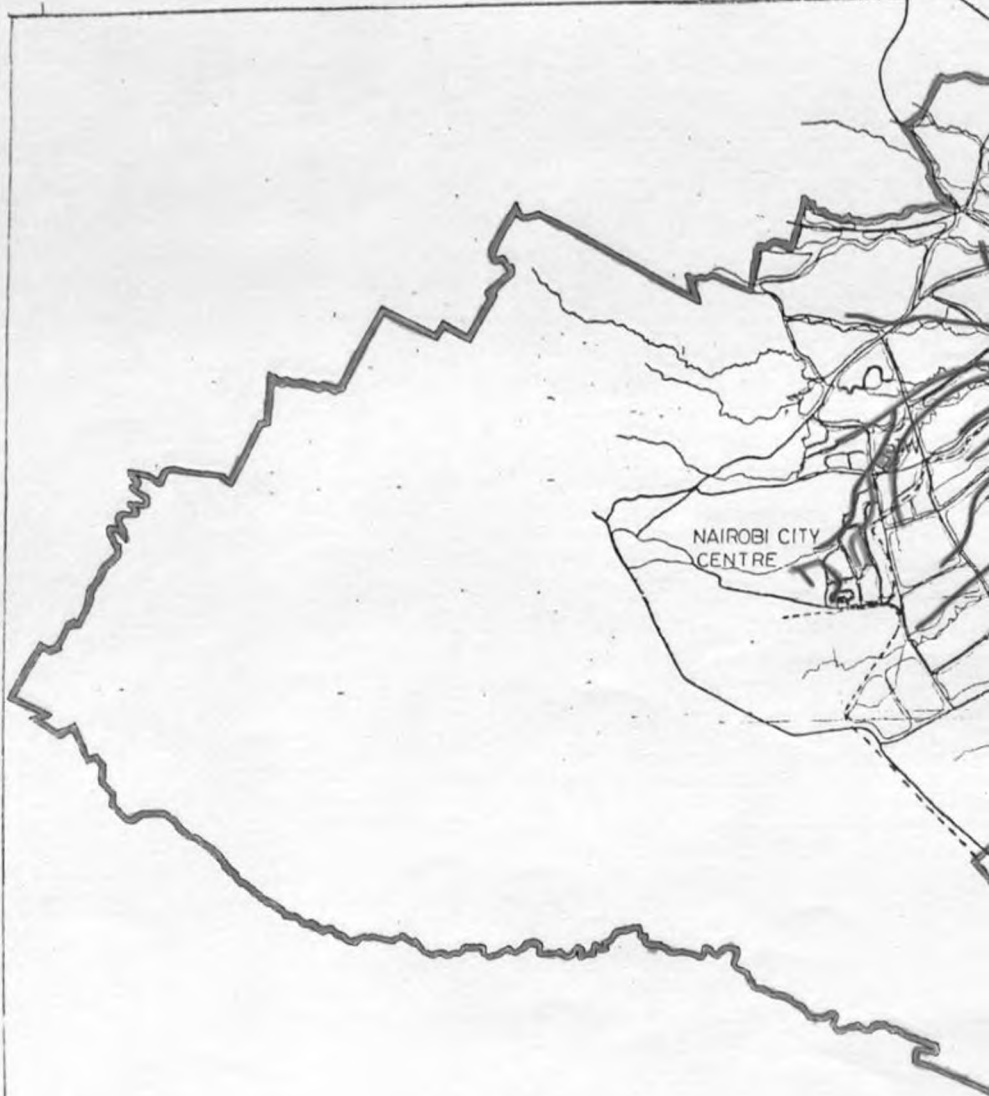
SEWAGE

Figures 6 and 7 indicate sewage flows proposed for 1985 and year 2000¹. Sewage flows proposed for various target years give an indication of developments - especially housing possible at various times.

The sewage flows for the target years indicated above will be sufficient for the projected catchment population at the corresponding times; the population, which will, in turn support the facilities in the district centre. It can be concluded therefore, that so far as, and only if we consider provision for sewage, the proposed district centre is a feasible proposition. This is because, both, the catchment population and the district centre sewage requirements have been well planned for.

Distinction is here made of the varying degrees of dependence on municipal sewerage between low income and high income developments. Whilst it is possible for the high income low density residential areas to depend on private sewage systems, (although municipal sewage does increase the possible densities), planned low income high density developments are solely dependent on municipal sewerage. For this reason the projected high income catchment population to the Northwest of Thika road is

1. The projected sewage flows at various times has been abstracted from SWECCO report Volumes I and II of August 1974. The volumes are entitled 1. Master Plan for Sewage and drainage - Prepared for WHO acting as executing agency for UNDP. Volume I contains the text. Volume II appendices and drawings.



NAIROBI AREA

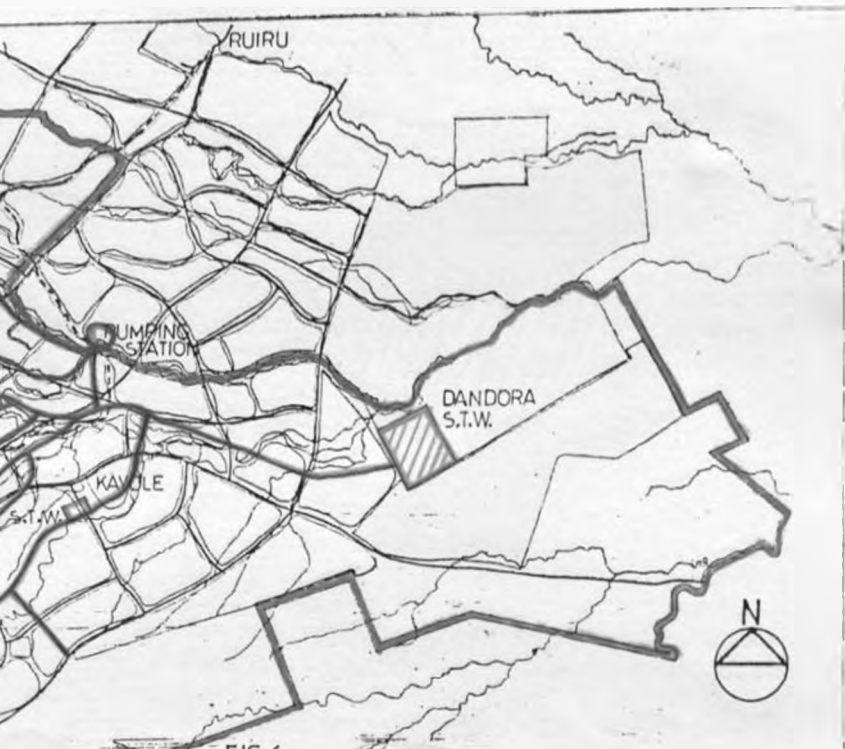


FIG 6

PROPOSED SEWAGE FLOW FOR
EASTERN EXTENTION - AD 1985

LEGEND see fig 7





NAIROBI AREA

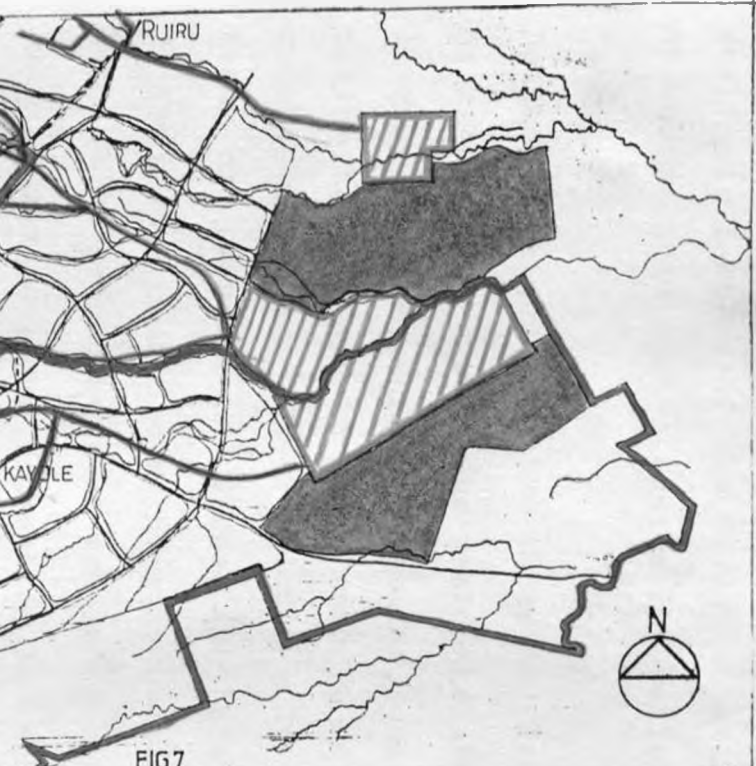





FIG7

PROPOSED SEWAGE FLOW FOR EASTERN EXTENTION - AD 2000

LEGEND

-  Sewage treatment works
-  Irrigation area
-  Sewer lines



SCALE 

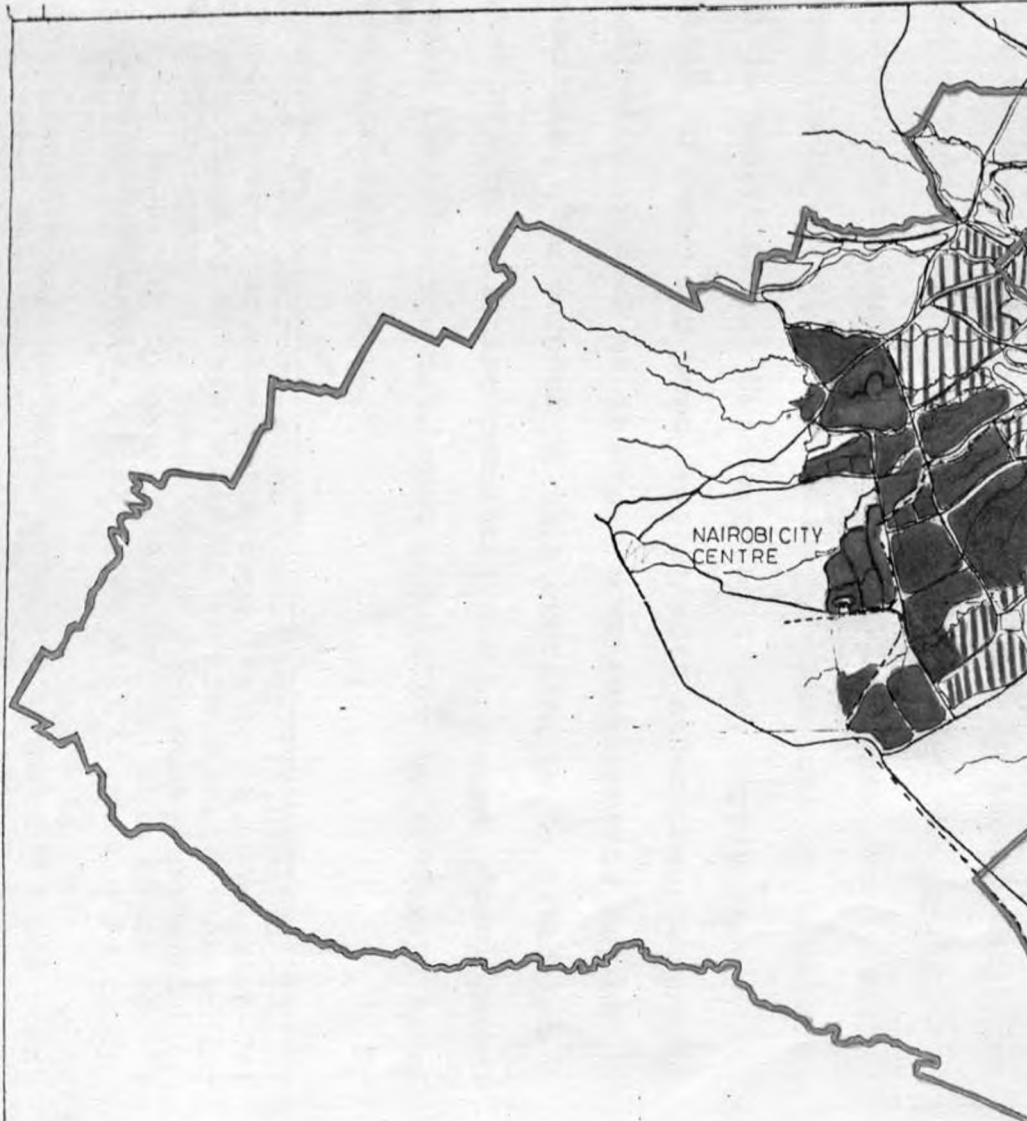
realistic inspite of the fact that it is not as well served by the planned sewage system for various periods.

Squatter settlements like those in Gitathuru Valley form an exceptional case. The residents are dependent on pit latrines and bore holes for water. Here the hazards of health abound. It is not a case to be emulated but rather contained. Nevertheless, a lot of squatter settlements are expected and indeed many are mushrooming. It is therefore possible to have a substantial catchment population before sewages schemes are completed. As I have indicated in my projection for the catchment population, this gives strength to a case of expecting a catchment population larger than projected through planned action.

WATER SUPPLY

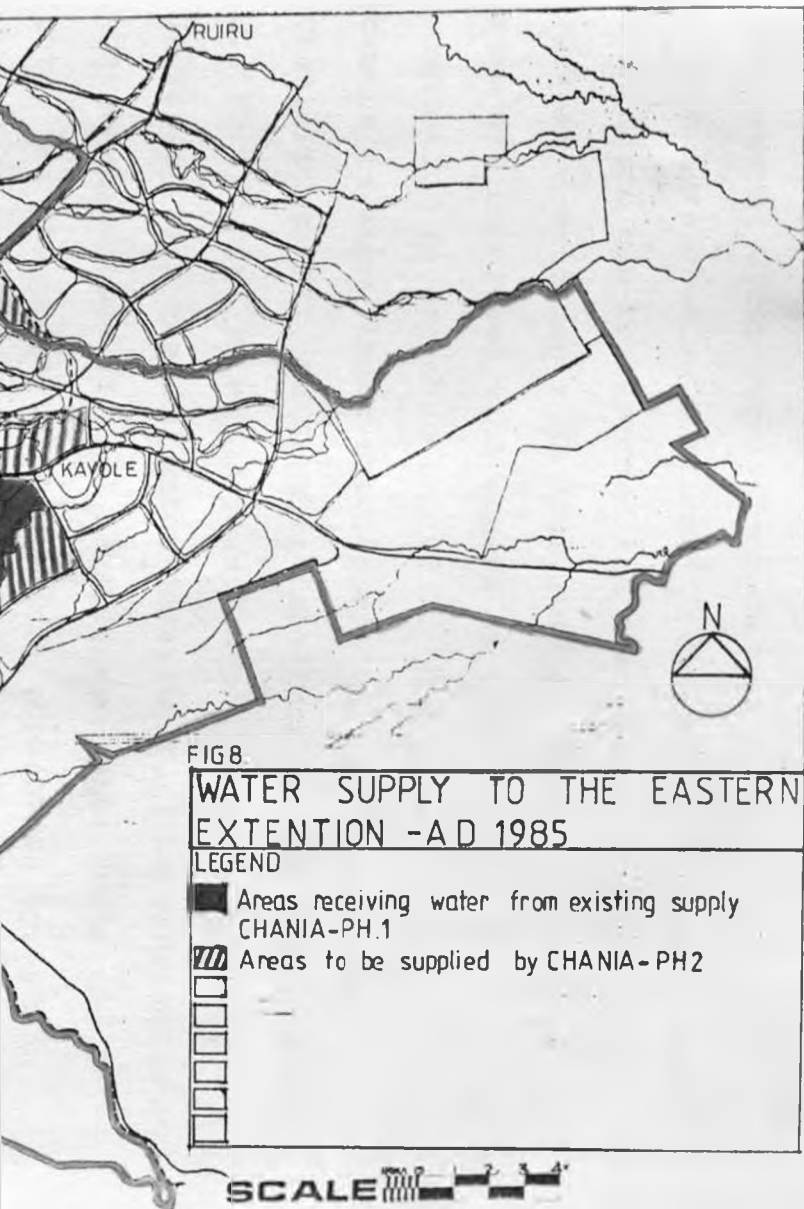
In absence of large quantities of ground water in Nairobi, its growth will have to be dependent on external water supply, whose provision at great cost to the public does involve considerable time spans. Chania Phase I and the proposed Chania Phase II are cases in point.

The current shortages of water supply especially in the eastern area clearly indicate either lack of carefully planned or poor maintenance of water supply installations. It is my contention therefore, that planning of any major developments has to tally with the target year of major water supply project in any one given area. This must be the case with the proposed district centre.



NAIROBI CITY
CENTRE

NAIROBI AREA



The present water supply from Chania phase I is at the moment stretched. Only committed developments as figure 8 indicate can be supplied and even then not adequately. Further developments as indicated in figure 8 although some are committed will depend on Chania phase II whose completion is expected by 1983¹. The proposed district centre is among those development that will depend on Chania phase II. It is therefore true to say the proposed district centre is not a feasible project before 1983. In liaison with the NCC water department, I have established that Chania phase II will have enough water supply to cater for the projected catchment population by 1985². Chania phase II however, will not supply enough water for the cities' population, and therefore for the catchment population by year 2000. Alternative water supply will have to be found, most probably at the foot of Mount Kenya³. It is possible that Chania phase II may supply enough water to cater for more developments other than has been indicated. In such an instance more developments may be feasible. The purpose of this exercise is to establish that all the existing committed and proposed developments which comprise the catchment population by 1985 will have adequate water supply.

1. In 1974 total Nairobi water supply was 118,000m³/d Chania phase I increased the capacity by 18,000m³ (1976-77) Construction of Chania phase II is now eminent. According to SWECO report this phase should have been completed by mid 80, Supplying an extra 236,000m³/d. This phase is well behind Schedule, if all goes well it should be ready by 1983.
2. Information regarding water supply upto say 1983 has been abstracted from Drg. No W/P/2064 Scale 1:25000 Entitled water supply to Kavole, Villa Franca and surrounding water and sewage department.
3. Information from one of the Senior Engineers in water departre indicate that investigations are already underway for additic source of water supply to cater for cities' needs by the year 2000.

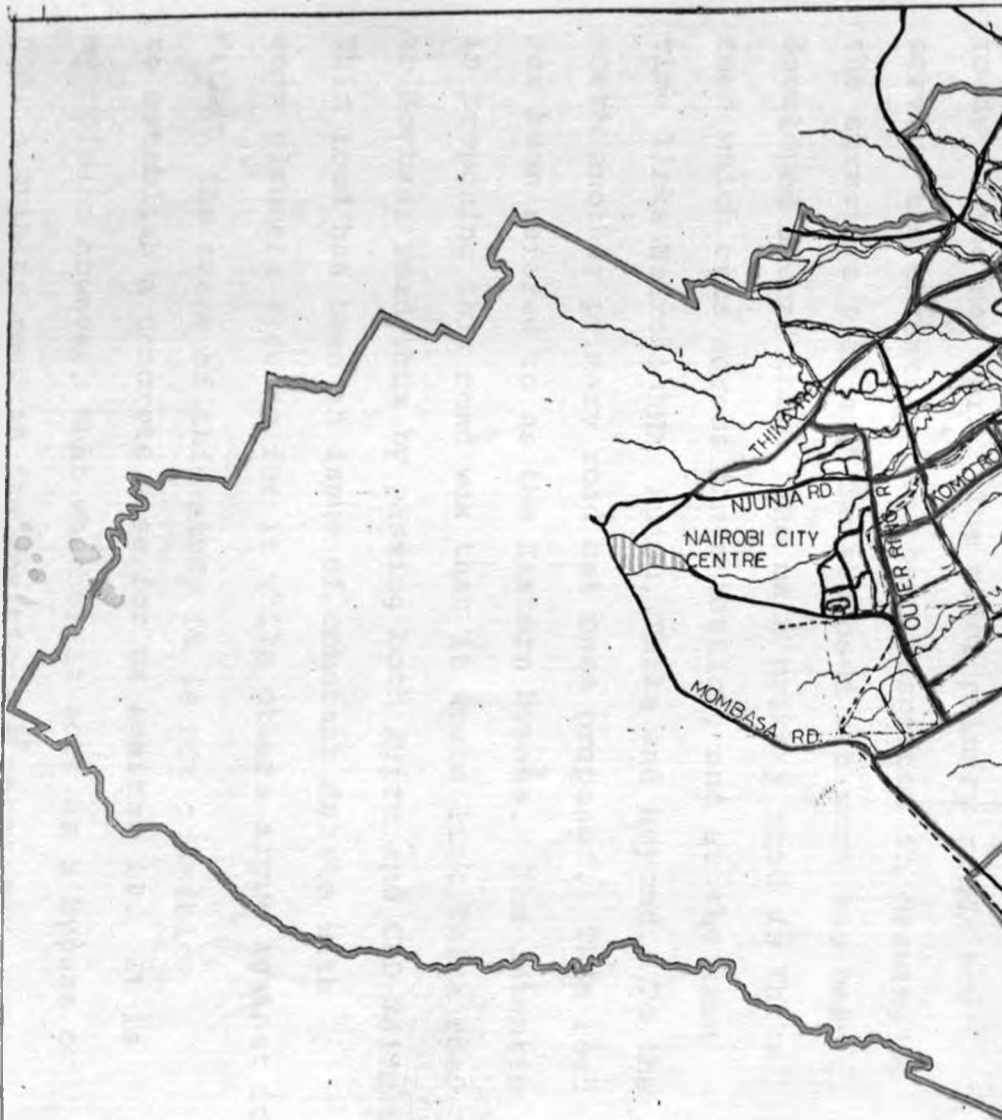
COMMUNICATION

ROADS

1985

If figure 9 and figure 4 are read in conjunction with each other, it will be apparent that the road net work anticipated by 1985 closely follow the development anticipated by then. The only area not well linked to the proposed centre by the network is the area north of Thika road. With a residential density of 30 P/H the population involved is not substantial to have a marked effect on the catchment population. The accessibility to the centre by 1985 therefore dictate that the centre will cater for a majority of low income population and a substantial middle income population.

The road system serving the catchment population comprise of Thika road, Outer Ring Road, Komorock, Njiru and extention of Njunja road up to Dandora. Outer ring road links Thika road to Mombasa road. Although a comprehensive road network has been indicated in the overall structure plan any large extention to the road net work now existing will be dependent on major developments in the area, such as the proposed centre, housing schemes or industrial estates. Apart from the major roads indicated, it is anticipated that in order to serve the catchment population efficiently a host of residential distributors will have to be developed the major ones have been indicated in dotted lines.



NAIROBI AREA

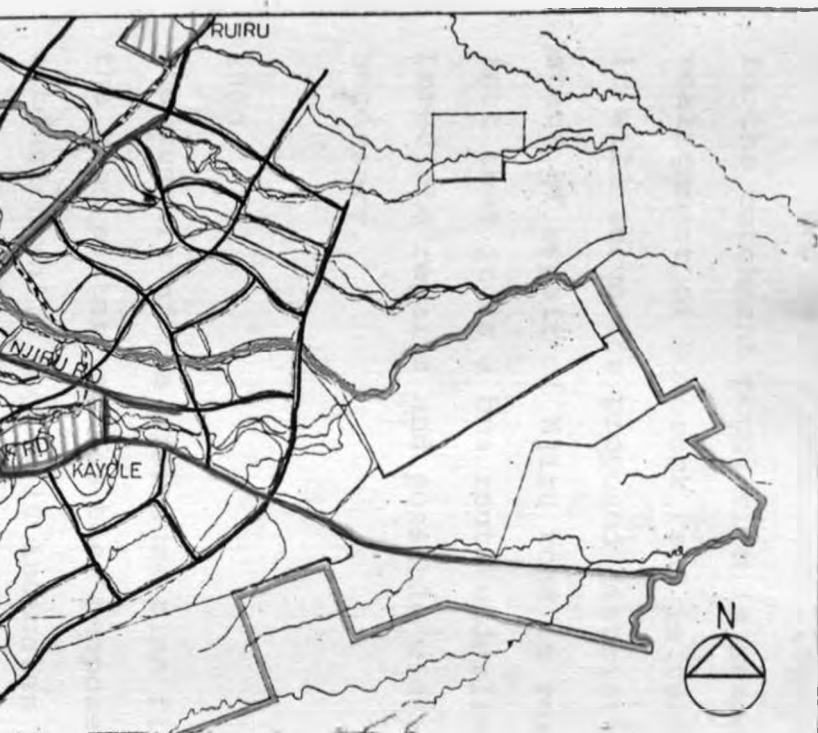





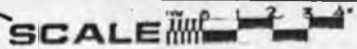


FIG 9

PROPOSED ROAD NETWORK FOR
EASTERN EXTENTION - AD 1985

LEGEND

-  Primary roads
-  Secondary roads
-  Tertiary roads to be linked by 1985
-  Future tertiary roads
-  Existing railway line



It is important to note that although accessibility to the catchment population is reasonable, major realignment of Komorock road is very crucial now that it will serve the proposed district centre. The state of repair of Njiru road is very poor, and the fact that it is a bus route underlines its importance. Immediate repairs and possible widening are very necessary.

2000.

The summary of the structure plan figure 3 indicates the road pattern as has been proposed for the eastern extension while figure 10 indicates the hierarchy of roads in the net work. The major primary roads now serving the extension have been respected in drawing up the structure plan and the proposed net work has been developed around them. The main primary road is Thika road which cuts across the extension, and at the same time links Nairobi CBD, Ruiru, Thika and beyond. To the South another primary road has been proposed. This road has been referred to as the Eastern bypass. The intention in proposing this road was that it would link Thika road to Mombasa road thus by passing both Ruiru and CBD Nairobi. This road has been an issue of constant debate with some planners arguing for it while others argue against it. Within the scope of this study it is not possible to establish a concrete case for or against it. It is my opinion however, that whether it acts as a bypass or not, a primary road in its position is necessary. Although it cuts across a few residential areas, it is largely peripheral to the eastern extension. This

reduces the volume of vehicular traffic transversing through the residential areas.

The major secondary roads serving the extension are outer ring road, an extension to Junja road, an extended Njiru road, and a realigned Komorock. Outer ring road and Njiru road link the two primary roads and the majority of the industrial areas are served by these two roads. Both of them link the majority of the residential population to the district centre. Njiru road links the centre to the population almost directly while Outer Ring road links to the centre through Komorock. Komorock road is the major road that will serve the centre, apart from being local to the Eastern extension, it serves the purpose of linking the proposed centre to the up country since it extends up to Kangundo in Machakos district. It is through Komorock road that the proposed centre will link to other parts of Nairobi. An extended Njunja road extends almost in the middle of the eastern extension and parallel to Thika road. This road links the three urban centres within the corridor of growth, that is CBD, Kayole and Ruiru.

A series of tertiary roads have been proposed which link secondary roads and thereby primary roads. Their purpose is basically local to the Eastern Extension. Tertiary roads have been proposed along existing earth roads for obvious economic reasons.

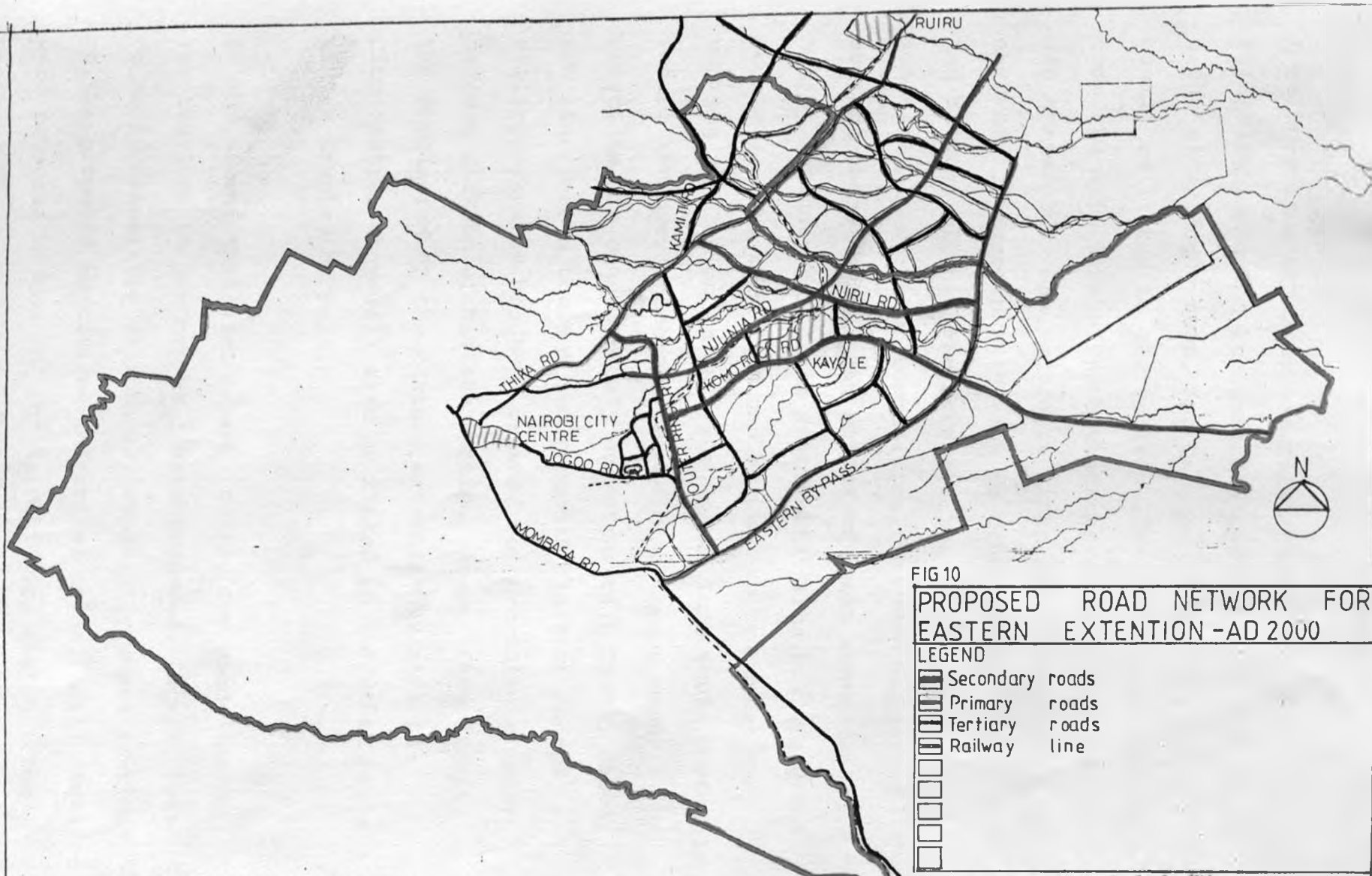






FIG 10
 PROPOSED ROAD NETWORK FOR
 EASTERN EXTENTION -AD 2000

LEGEND

-  Secondary roads
-  Primary roads
-  Tertiary roads
-  Railway line

NAIROBI AREA

SCALE 

RAILWAY

A railway line transverse across the Eastern Extension. This line links the residential population to industrial areas along Jogoo road, and Dandora. Kassarani can easily be linked to the railway line by a minor extension from the main line. The advantages of this railway line are threefold. One, since it links some industrial area of the Eastern Extension to other towns, Ruiru Thika and Nanyuki, it has the potential to transport a substantial amount of commodities from the industrial area to these towns. The volume of heavy commercial vehicles transversing the residential area will be greatly reduced. Two, this line can be used to transport the working population to and from work. This would obviously reduce the overdependence on municipal buses whose provision is conspicuously overstressed. Three, since the line passes through the proposed district centre, a real opportunity has been created for providing a major railway station within the centre. Apart from linking the population of the eastern extension by rail to City Centre, they will also be linked to the other parts of the Country by rail.

At the moment this line caters mainly for goods train. For the line to perform as I have proposed, it will have to be substantially elaborated, especially where it links to the proposed centre and industrial areas. Rail linkages were proposed by the MGS for Nairobi City region. The performance of the municipal bus service and the rising cost of oil dictate an urgent review of the MGS proposal

for rail linkages with the hope of adapting them. The linkages for the eastern extension can then be viewed within the overall city context.

CHAPTER II
WESTLANDS CASE STUDY

FUNCTIONAL ZONING

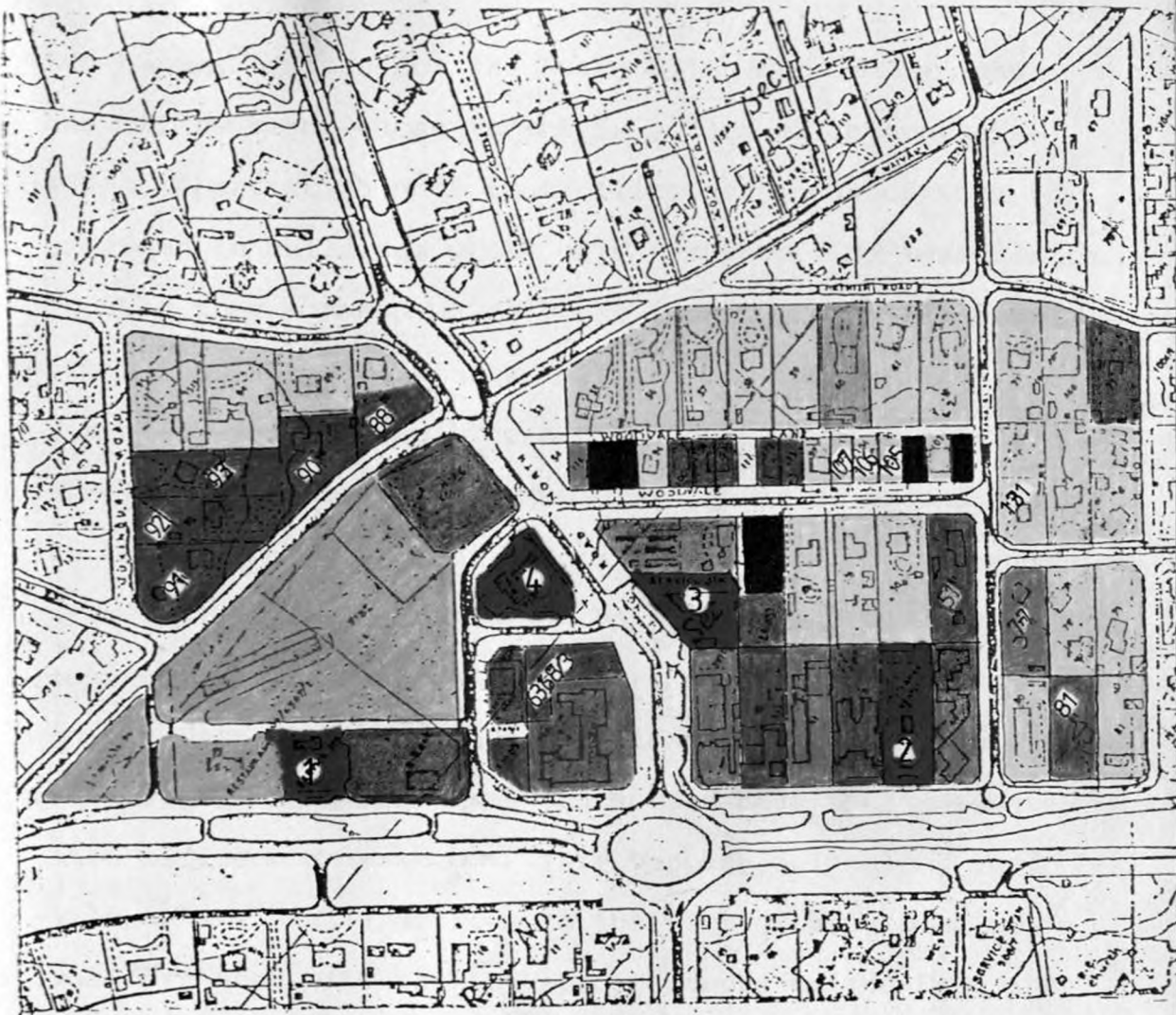
Fig 1 shows the plan of Westlands shopping centre as has been extended recently¹. Within the scope of this study it is not possible to trace the historic development of Westlands shopping centre. Functional zoning analysis will therefore be based on the new boundaries.

The main functions within the centre can be categorized as, hotels and restaurants, shopping, offices, a market, residential accommodation, petrol stations, banks, light industry and schools. From the list of functions within Westlands it is apparent that Westlands has all along been considered as a shopping centre in the main without wider civic and cultural significance to the population it serves. With the expansion of its boundaries, it is likely that other facilities, cultural, educational and recreational will be provided. This will happen mainly for commercial reasons as opposed to social considerations. Already, there is a cinema proposed to seat about 500 people. Perhaps it is best to deal with individual functions. analyse their levels of provision and implications of their respective locations.

OFFICES.

There are two types of office accommodation provided on two distinct zones. To the West of Ring Road the offices are mainly professional. These comprise of

¹The extension of Westlands was approved by Town Planning committee meeting of 19.9.78 min 5 the limit of extension are indicated on a map entitled Extension of Westlands shopping centre Drg No W/C/C/1/79. Scale 1:1000.

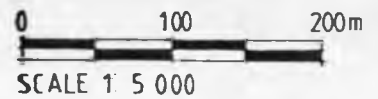


CURRENT FUNCTIONAL ZONING

Fig 1



WESTLANDS



KEY

	% of total area				
	HOTEL AND RESTAURANTS	11.5		RESIDENTIAL SHOPS AND OFFICES	3.1
	RESIDENTIAL	28.0		SCHOOL	1.3
	SHOPPING	5.2		INDUSTRIAL (LIGHT)	1.8
	PETROL STATION	5.0		MARKET	1.3
	OFFICES	7.3			
	SHOPS AND OFFICES	18.5			

two banks, offices for the Automobile Association, and one office block whose tenant is a firm of accountants. It is important to note that office accommodation here is provided in buildings whose only use is office accommodation. Further they accommodate only one tenant who in all cases other than the accountants offices own the premises. This situation is changing. The new building on plot 6368/4 apart from offices also accommodate shops at ground floor. To the East of ring road the majority of office accommodation is relatively new and provide both for commercial and office accommodation. The greater proportion of office accommodation to the East of Ring road is provided as one use of multi use buildings. In a few cases old houses have been converted into office accommodation. This happens only along Woodvale Grove. While offices to the west of Ring road are well provided with parking space, those to the East are not. This is because they have to compete for the available parking with other uses.

The post office is provided along Mpaka road which can be considered a peripheral road. The location does not appear to be appropriate now, but earlier on when the majority of Westland shopping centre was concentrated along Chiromo Road this location was appropriate. With private ownership of land communal facilities do not always have their choice in location. It is unlikely therefore that the post office location will change in the near future.

Office accommodation is evidently on the increase in Westlands. This is for a number of reasons.

1. The expansion of Westlands lowers the value of residential plots. Conversely the value of these plots when used for office buildings is higher
2. The additional commercial activities generated by an extended Westland is gradually increasing the demand for office accommodation.
3. The overall policy of the NCC as regards office accommodation in Nairobi is to limit the growth of offices in the city centre and encourage investment in office accommodation in suburban centres like Westlands.
4. An increased plot ratio demands tall structures. Floors other than ground floor are not suitable for shopping accommodation. Office and apartment accommodation will therefore compete for the upper floors. For the majority of the new buildings, the upper floors are used for office accommodation.

There is no doubt that a serious problem is in the making as far as parking is concerned. Although the new developments which incorporate office accommodation invariably incorporate some on the plot parking, this is manifestly inadequate. While the problem is not critical to the west of outer ring road to the East some measure must be taken before the problem deteriorates.

PETROL STATIONS

There are four service stations within the centre. The only petrol station appropriately located is petrol station No. 1. It is sandwiched between two independent activities, a restaurant and offices for AA. What is more it is located in a through road peripheral to the centre. It is therefore convenient to the passing traffic. Its splendid location is undermined by access from two sides. Its efficiency will be greatly augmented if one access is blocked, thus retaining the access from Chiromo road. Petrol station no 2, Although this petrol station has a facade facing Chiromo road, it is internal to both vehicular and pedestrian circulation of Westlands. There are two ways of viewing this petrol station. One, within the context of the existing structure of Westland two, within the context of an improved structure of Westland as embodied in Fig 2. Within the context of the existing structure, observations indicate that the petrol station is a source of a serious traffic bottleneck especially at peak hours. Its location can therefore be considered ill conceived. Within the context of an improved structure of Westland the petrol station can be viewed as a part of a major car park zone peripheral to the main shopping precincts. Then, its location can be considered appropriate. If further developments of the plot are contemplated due to the increased plot ratio and the forces of property market, a petrol station could still be incorporated to take the advantage of proximity to a major parking zone.

Petrol Stations No. 3 and 4

The Ring Road along which these two petrol stations are located cuts across the centre and in the process produces serious traffic congestion especially during rush hours. This is because it caters for through traffic over and above the traffic local to Westlands. This dictates against the retention of Ring road and therefore of the two petrol stations. This notwithstanding, the forces of property market are unlikely to consider these two petrol stations a good use for land. Even without the diversion of Outer Ring Road these two petrol stations facing Chiromo road could with modifications to their access and a change of shopping pattern as proposed be retained. Those along Ring Road can only advantageously be relocated along Muthithi road. Where possible, an attempt should be made to relocate them in such a manner that they serve both the parking zones and through traffic much as has been suggested for those facing Chiromo road. The level of business of petrol station No. 3 by comparison appears to be rather low. This is a value judgement and not backed by any statistical facts. In relocating these two petrol stations therefore, an attempt should be made to establish whether, there is in fact, a demand for four petrol stations within Westlands.

MARKET

The location of the Market has hitherto been peripheral to the main commercial activities of Westlands. It was originally intended to serve African domestic workers in the surrounding suburbs. This more than anything else explains why it was relegated to a peripheral location. With the expansion of commercial boundaries of Westlands, the market is now central to Westlands. Today the market provides largely for the day to day needs of the low income population. A few high income mostly African members of the population do however, patronize the market for it is only here that ingredients for some traditional dishes will be found. This number however, is negligible and is an anomaly to the general rule. In general the high income members of the population do most of their shopping for vegetables etc goods otherwise found in the market mainly in shops and groceries along Chiromo road.

There is an economic explanation for this observation. The rents for stalls in the market is much lower than in the groceries. The lower overheads in turn allows for cheaper prices. The low income population is interested in the worth of their money in real terms. The environment inside the market to them is not an issue. They are willing to accept poor packaging for lower prices. Although most of the vegetables, fruits and other foods sold here compare well with those sold along Chiromo poor storage affects the quality downwards. Poor storage facilities force the stall owners to lower their prices and depend more on a high turn over for their profits. Groceries

along Chiromo road on the other hand occupy prime shopping space. Their rent is therefore high. They provide better stored, better packaged goods, better shopping environment, and therefore higher priced goods. The patrons can only be members of the high income sector of our population. This would suggest as has been observed in the city market that provision for markets should fall into two categories. One for the low income and another for the high income sectors of the population. Alternatively the two could be incorporated in one complex but different parts of the complex. This is the case with the city market.

In general markets within Nairobi have a way of attracting hawkers in their precincts. This is because they form very dynamic commercial nodes. Among the hawkers within the market precinct in Westlands we find, light industrial activities, (carpenters, tinsmith, packaging etc), eating Kiosks and an assortment of other easy to pack merchandise. It would therefore be true to say that while the majority of stalls should be permanent allowance for temporary stalls must be made.

While the location of the market vis a vis the expanded Westland cannot be contested, inside it is very congested. There is every reason to suggest that expansion is overdue. Due to lack of space it will be inevitable that any contemplated expansion be vertical. The extent of vertical expansion may, however, be limited by horizontal expansion into the adjoining plot now used by unlicensed hawkers.

Provision for delivery, carpark for shoppers and garbage collection are manifestly inadequate. Provision for delivery is inadequate in terms of unloading bays and turning circles. Provision for car parking in terms of numbers is not critical, rather it is the location along Ring road which is in contradiction to the main entrance along Woodvale Grove. This explains why the length of Woodvale Grove near the Market is congested especially after 4.30 p.m. The condition of garbage collection is appalling. Huge piles of uncollected garbage along Woodvale Grove and near the market precincts is a characteristic feature of the town scape. Future improvement in cleansing facilities of the market should take into consideration the characteristic inefficiency of NCC cleansing department and allow for delayed collection. NCC in turn owe the public better cleansing services.

LIGHT INDUSTRY

All commercial activities which fall under the general classification of light industry are located along Woodvale Grove. These include carpentry, picture framing, car repair, crafts, textile and Lawn mower repairs. These can further be classified into those that produce articles for high income and those that produce articles for low income. There is sufficient evidence, as discussed under 'market' to conclude that those for low income articles are a direct result of the market activities. The rest have been located along Woodvale Grove due to its peripheral location in respect to the main shopping activities along

Chiromo road. Their location is in general terms in keeping to the location requirements of light industry. Services apart, goods produced in these industries are not necessarily marketed on site. They do not therefore require very prominent location vis-a-vis shops. Most of the light industries have been housed in old houses whose income as residential accommodation is negligible.

A few conclusions as to location of light industries can be made.

1. Whether through design or by unplanned action light industry will invariably develop. Any town centre must therefore be designed to cater for them.
2. As can be observed both in CBD Nairobi and in Westland, they tend to congregate along Kirinyaga road while in Westland along Woodvale Grove.
3. They tend to be peripheral to the main shopping activities. This again is true for CBD Nairobi and Westland.
4. Markets seem to form a nucleus for their growth. This is true for Westland, Eastleigh and further afield in places like Kiambu.
5. The supply of raw materials and delivery of the finished product to retail outlets demand a high level of vehicular accessibility.
6. Apart from those directly associated with the market, on site shopping is not a major planning consideration. This of course precludes those whose commodities are a service like lawn mowers repairs, car repairs etc. Light industries therefore demand marginal pedestrian accessibility, especially when compared to conventional shops.

HOUSING.

Until recently, and as the plan of functional zoning in Westlands indicates housing in Westlands has been provided in the form of detached houses on single plots. This situation is changing for a number of reasons.

1. With the expansion of Westland and a shopping centre and the subsequent encroachment of shops on to plots in the neighbourhood of houses, the suburban feel of houses in Westland has been eroded. The houses therefore do not appeal to the affluent any more. This in turn forces the rents downwards.
2. Within the new commercial boundaries, all the residential plots have been designated 'commercial plots' Applications of change of use are readily approved. 4 houses along Woodvale Grove have been converted into light industrial concerns.
3. The increase in plot ratio dictate against the retention of single houses whose returns are low. A few reasonably good houses have been demolished to make way for more lucrative commercial structures.
4. Some houses are old and dilapidated; when they are demolished it is not considered prudent to replace them with new ones.

On the strength of the above points and observation on the site, it is possible to make a few conclusions as appertains the current and future trends of residential function in Westlands.

1. Within the extent of the new boundaries of the shopping centre residential accommodation will gradually take the form of block of flats, Maisonettes, and

apartments on top of other uses like shops. This is the case on plot 131 and 81.

2. On redevelopment some plots which were residential, hitherto, will not incorporate any residential function. This is the case with plot no 77 which incorporates only one departmental store and plot 51 which will incorporate shops and offices.
3. Plot amalgamation and/or comprehensive redevelopment have changed and will continuously change the current nature of residential development. Plots 107, 106, 105 have been comprehensively developed into three pairs of semi detached maisonettes. Plots 91, 92, 93, 90 and 88 all residential developments have been amalgamated and application of change of use approved. A multistory comprehensive development incorporating shops and offices has been proposed.
4. The zoning of residential land use will no longer be possible. The resultant mix in land use has alot to its merit.

SHOPPING.

The majority of older shops are located along Chiromo road while the newer shops are located along Mpaka road. There are a few shops under construction along Woodvale Grove and Waiyaki way. Shops along Chiromo road turn along Ring road. The following are a few observations as appertains zoning of shopping activities.

1. The main shopping activity is zoned along the main through road. This has a few implications. Chiromo road being the main access to Westland, and providing for the majority of the carparking causes a serious conflict between shopping activity, parking, and vehicular access. To rectify this I propose that the lane behind the main shopping street be converted to pedestrian shopping street thus separating the bulk of shoppers from the major vehicular access and parking for Westlands, See Figure 2.
2. Ring road creates a very dominant break to the main shopping street. This is very undesirable both in functional and visual terms. Exclusion of the ring road, change of the main shopping street and subsequent extension of pedestrian shopping street as indicated in figure 2 can both unify and enhance shopping activities in Westlands.
3. The departmental store on plot 77 has both the appropriate location and the size to form a magnet for the proposed pedestrian shopping street. The market can form the central magnet and the proposed development on plots 91, 92, 93, 90 and 88 could incorporate yet another shopping magnet at the extreme end.

HOTEL AND RESTAURANTS.

Within the limits of Westland shopping centre there is one hotel, Jacaranda hotel, and one restaurant agip motel all under one management. The hotel has a location removed from other uses which is, at the periphery of the centre.

Near Agip Motel is another restaurant, Kentucky Fried Chicken. It is important to note that the major restaurant and Motel activities are grouped within one zone. A few conclusions as appertains the above observations can be made.

1. The location of the hotel cannot be contested. Its peripheral location is ideal. It is a large land user and does not in the main depend on patrons local to Westlands either as shoppers or as residents for its survival. The location of the Motel along the main through road is also ideal.
2. Location of the main restaurants near the hotel has some obvious economic advantages. This, however, is at the disadvantage of a serious lack of restaurants at the shopping zones to the east of ring road.
3. Peripheral location of the hotel should not imply isolation as it is the case with Jacaranda Hotel. It is possible to intergrate the hotel to the centre through well thought out linkages both pedestrian and vehicular as has been proposed in Fig.2.

Eating areas for the low income are provided in Kiosks in and around the market.

MOVEMENT PATTERN, STRUCTURE, AND PARKING

It has proved prudent to treat movement and structure in the same section because in any urban system, be it historic or contemporary, movement both vehicular and pedestrian are the essential determinants of the structure. The first part of my commentary will be descriptive while the second part will be prescriptive.

PART 1

VEHICULAR MOVEMENT

The main characteristics of Westlands shopping centre vehicle movement is orthogonality with two diagonals superimposed. Chiromo road apart, the orthogonal system is local to internal linkages within Westlands. The two diagonals branch from Chiromo road. In hierarchy therefore, they are secondary to Chiromo road. Chiromo is a major through road which links Nairobi to both Nakuru and Mombasa. Of the diagonals, Waiyaki links Westlands to the Southern part of Parklands while Ring Road links Westlands to Northern parts of Parklands and Kabete.

The general layout of plots is grid iron as defined by the orthogonal road systems. The diagonals do, however give circumstantial variation to both the general orthogonal structure of Westlands and the grid iron plot layout in particular.

Ring road is very congested especially at rush hours. Congestion apart, Ring Road and its road reserve form a very predominant physical and visual separation of Westlands which undermines the cohesiveness of Westlands both in visual

and functional terms. It is apparent through observation that the majority of traffic through Ring road is through traffic. The essential purpose of Ring road is therefore to serve as a link to Chiromo road, a shorter route to the City Centre. Its purpose to the internal linkages of Westlands is therefore of marginal importance. This notwithstanding, I submit that a link between Kabete-Waiyaki and Chiromo road is essential, only, it can be achieved else where. Waiyaki road has been peripheral to Westlands and has very little traffic especially when compared to Ring road. There has been a proposal to convert Waiyaki road into a through road linking Nakuru to Thika and in the process avoid Nairobi City Centre. This will further aggravate the already existing vehicle congestion and will simultaneously undermine Westland cohesiveness as an urban entity. The proposal must be considered very untenable. Waiyaki road in its present location vis a vis an extended Westland calls for a revision of its role in internal and external linkages of Westlands (see figure 2.)

BUS ROUTES.

Buses in Westland use either Chiromo road or Kabete - Waiyaki road. There are no buses transversing Westlands. This in itself underscores my thesis that only Chiromo and Kabete- Waiyaki road should be regarded as through road. The absence of buses inside Westland further suggests that there is no need of through traffic in Westland. In any case the overall width and length of Westlands (700x400 m) are small enough not to demand a very high level of vehicle accessibility except for servicing.

CAR PARK

The majority of cars in Westlands are parked along Chiromo road, Ring road and Mpaka road. Along Chiromo and Ring road the parking is a part of the road reserved, while it is on plot parking and by the road side along both Woodvale Grove and Mpaka road. With the proposal for expansion of Westland the NCC has proposed additional on plot parking on three plots, two of which are not redeveloped along Woodvale Grove and two plots one of which is not developed along Mpaka road. This can only be viewed as a half hearted attempt to resolve the car parking problem in Westlands. The general observation that the more obvious financial gains in providing floor space in building than external space for traffic has the consequence that the former increases while the latter remains static is pertinent to Westlands. Provision of extra car parking alone is in itself counter productive because congestions on roads prevail without simultaneous proportionate expansion and elaboration of road linkages. It has been observed further that the congestion of cars both on roads and carparks is not over the entire area of Westlands rather over the areas which has become important foci like Uchumi Super market, Mpaka road, near the market and Chiromo road East of ring road. There can be no good solution which does not attempt at a distribution of carparking over the entire area of Westlands. A reorganization of shopping pattern and vehicular accessibility must be seen as essential ingredients at an attempt to distribute carparks and therefore improve the parking situation in Westlands.

PEDESTRIAN CIRCULATION.

Pedestrian circulation generally follows vehicular movement. There is no single instance of intended pedestrian paths which operate independent of the vehicular movements.

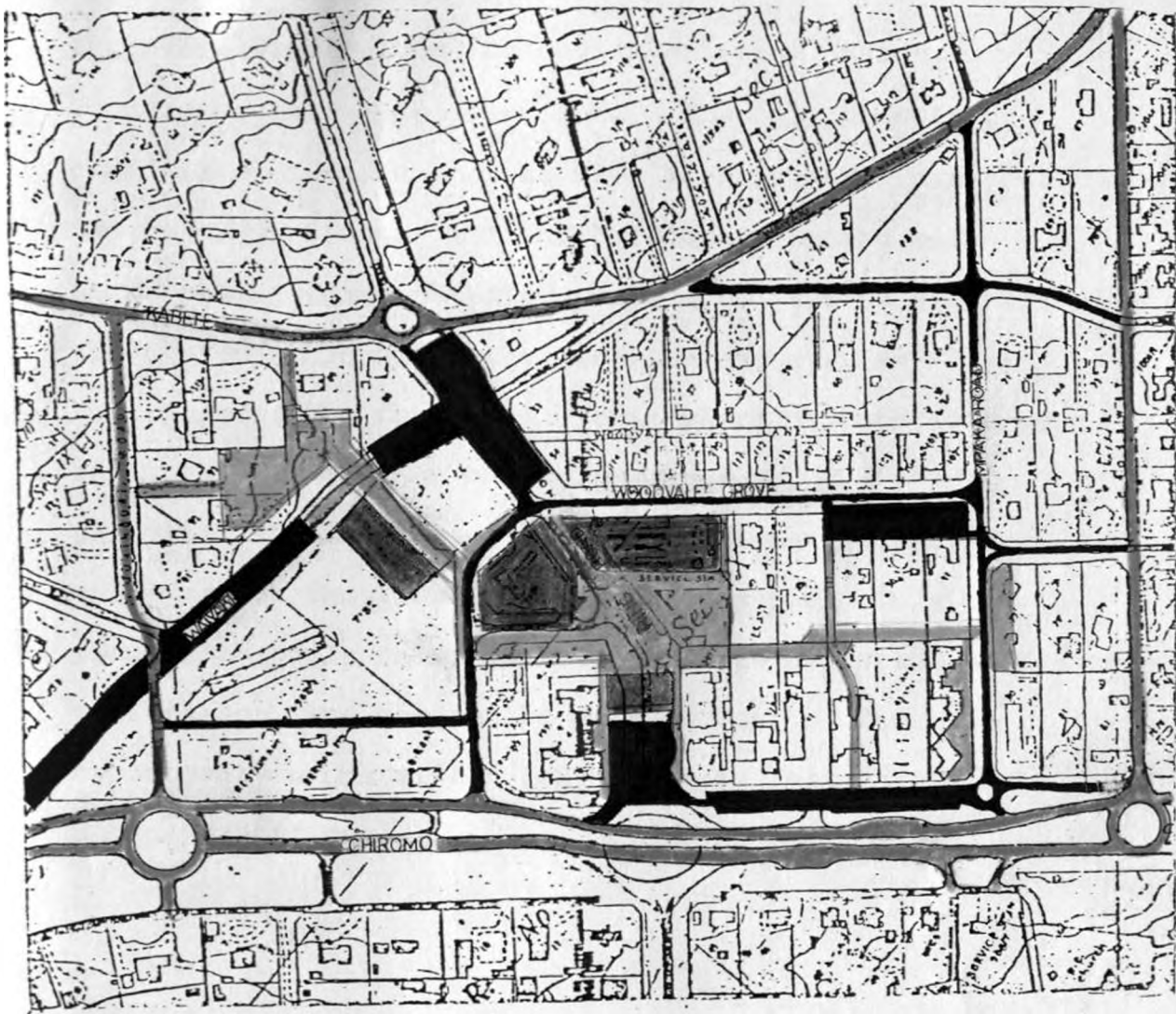
PART 2

PROPOSED IMPROVEMENT

The basic concept in an improved movement pattern in Westlands incorporates:

1. A removal of all through traffic in Westlands and a subsequent relocation at the periphery.
2. Utilization of the loop formed by Woodvale Grove and Mpaka road as the major artery of internal vehicular access and servicing.
3. A segregation of pedestrian movement from vehicles thereby unifying Westland as an urban entity.
4. A consolidation of carpark into well distributed carparking pools located at the periphery of the centre.
5. An introduction of a square near the market.

The general effect of the proposed improvement will be, to improve shopping activities and at the same time increase shopping frontage. The proposed improvement is only conceptual, to implement the proposal the details of road widths, number of cars, desired densities for new buildings would have to be worked out. The changes

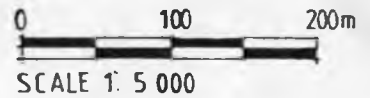


PROPOSED IMPROVEMENT TO PEDESTRIAN AND VEHICULAR CIRCULATION IN WESTLANDS







Fig 2



WESTLANDS



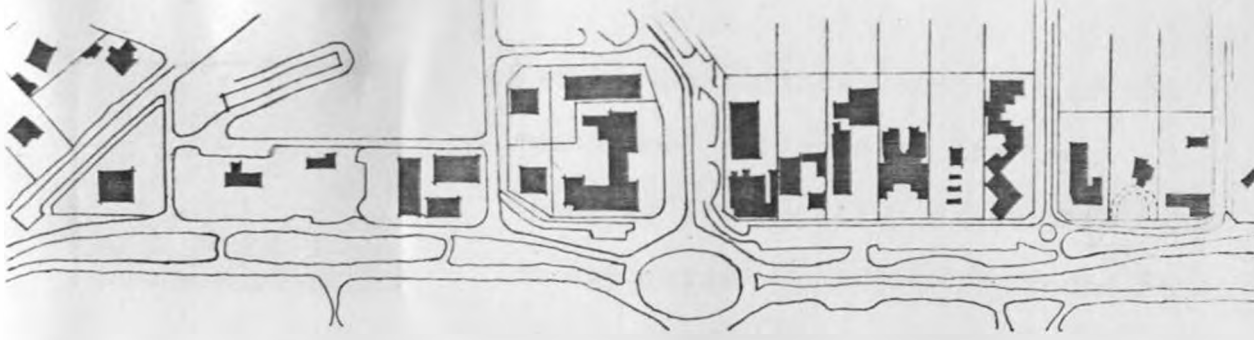
KEY

	PEDESTRIAN ROUTES AND SPACES	<input type="checkbox"/>
	OUTER RING ROAD	<input type="checkbox"/>
	PROPOSED NEW BUILT MASSES	<input type="checkbox"/>
	INNER VEHICULAR LINKAGES	<input type="checkbox"/>
	CAR PARK POOLS	<input type="checkbox"/>
		<input type="checkbox"/>

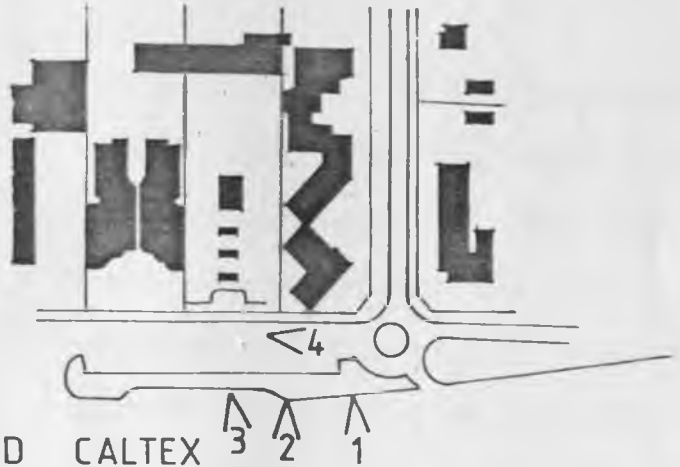
proposed largely occur on government land, roads, road reserves and proposed lane. The only privately owned land on which changes have been proposed are the two petrol stations. This as has been proposed elsewhere can be compensated by plots along Kabete Waiyaki road which would be better location anyway. Short of this possibility the maxim that where private interests and public interests clash public interests must be paramount should apply. In such an instance monetary compensation should be considered adequate. Only one petrol station is taken up by the Square on to the other one, a different land use can be a replacement. The opportunity exists within the square to incorporate some municipal offices.

BUILT FORM AND TOWNSCAPE

Westland is not a product of a preconceived urban form, rather it is a by product of a land plan. This is true for the original layout and for the layout recently drawn up indicating the limits of expansion. Nevertheless, the sheer need for access, Town planning by law, and historic development have produced in some instances urban spaces of good quality. In this section an attempt has been made to capture the essential character of Westlands in Townscape and built form terms.



CHIROMO ROAD
Fig. A



AREA AROUND CALTEX
PETROL STATION
Fig. B

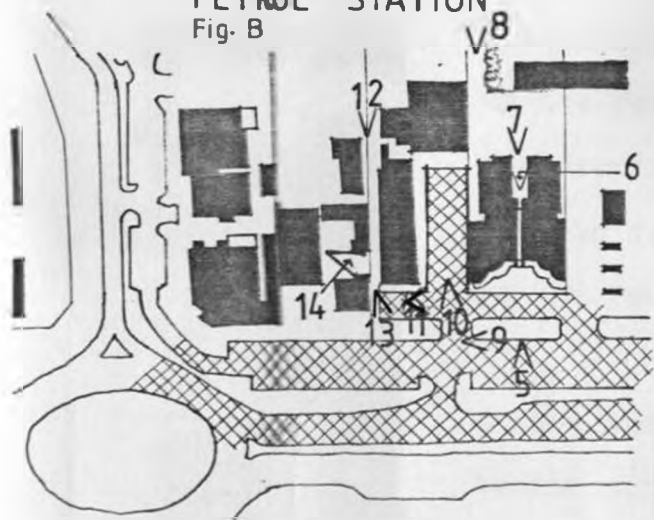
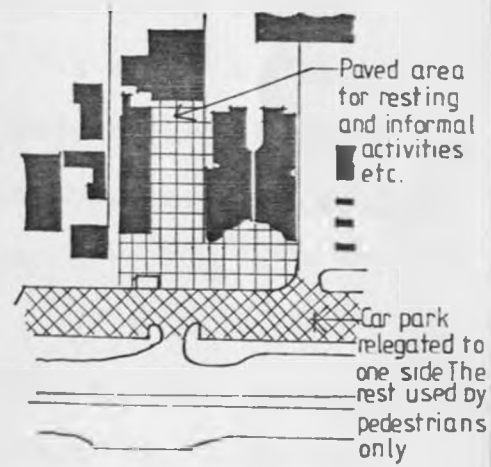


Fig. C



IMPROVED CIRCULATION AND PARKING
Fig. D

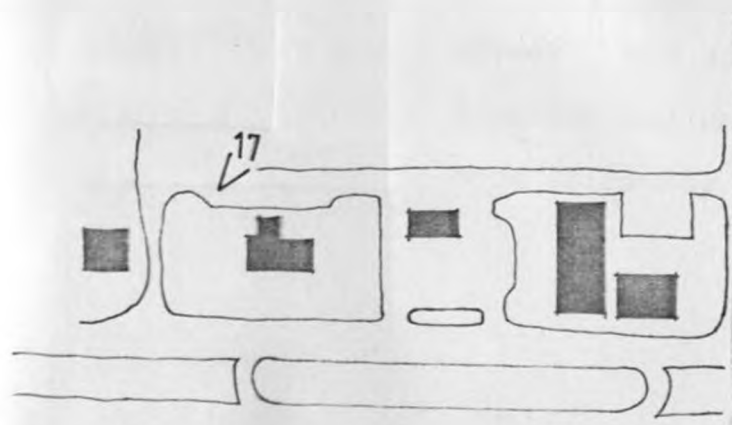


Fig. E

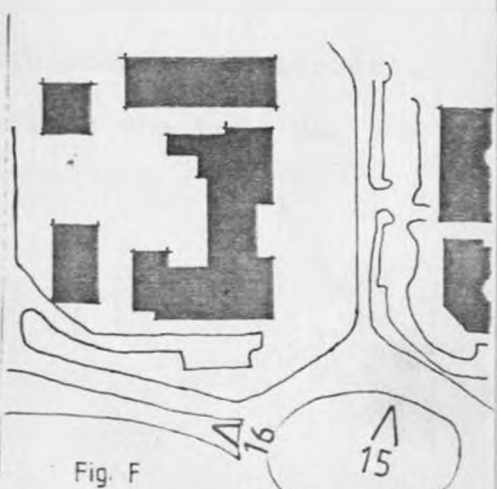


Fig. F



1

Notice the vertical emphasis of the roundabout achieved by the tree. The tree and its location makes conspicuous an otherwise inconspicuous roundabout. Its shading is utilized for rest, at lunch hour.



2

The end building is not perpendicular to the streets and therefore, accommodates the street turn. The trees form a wall which defines the parking and separates it from Chirano road. Trees provide shade for cars and pedestrians.



3

The petrol station creates a break to the facade. Its entry and exit interrupts the pedestrian movement. The big sign does however contribute to the Townscape.



4

A shoe shine stand - small hawking businesses are a part of the street activities. They are essential services, and add interest to the street. The sign adds to the street's graphics and defines the node for the shoe shine boy.



5

Note the only arcade in Westlands. An in between space in the urban context-forming a transition between the front and the back street. The arcade forms a major link between Chiromo and Woodvale Groove. It should be further exploited in an effort to pedestrianize and therefore internalize Westlands shopping activities (see 'Movement Pattern and Parking').



6

View from, within the Arcade. Functionally the arcade is just a passage with only one shop entered from it. Note the contrast in day lighting which further underscores its transitional qualities.



7

The approach from the back street. Note the typical use of back street, car park. The change of level articulates the arcade.



8

Overgrown hedge helps to define the path. The spatial definition clearly differentiates the path from the space - the car park beyond.



9.1



9.2



10



11



12



13

The car dominates although the car and pedestrians co-exist. Street activities could be greatly improved if the building set back is used for pedestrians see sketch in fig C.

A well defined urban space - has potential for a host of activities, resting informal Kiosks etc. Now it's tarmacked and raided by cars.

Flower stand, a prominent feature along Chiromo road. The building forming the background see 9, 2 is a relic of our colonial past. Note the hipped red G.C.I. roof

Typical side lanes dirty, and generally unkempt. Used for odd jobs, car cleaning etc. If a link must be provided between two streets an arcade or a lane with shopping activities should be preferred. As it is, lanes are dead no mans land and must be discouraged.



14

Typical use of back street car parking. In this instance parking is a temporary use. Space awaits development.



15

Ring Road as seen from Chiromo. Here pedestrians and cars co-exist much more happily than along Chiromo East of Ring Road. The petrol station provides for prominent graffiti. The atmosphere is not as vibrant as it is along Chiromo Road.



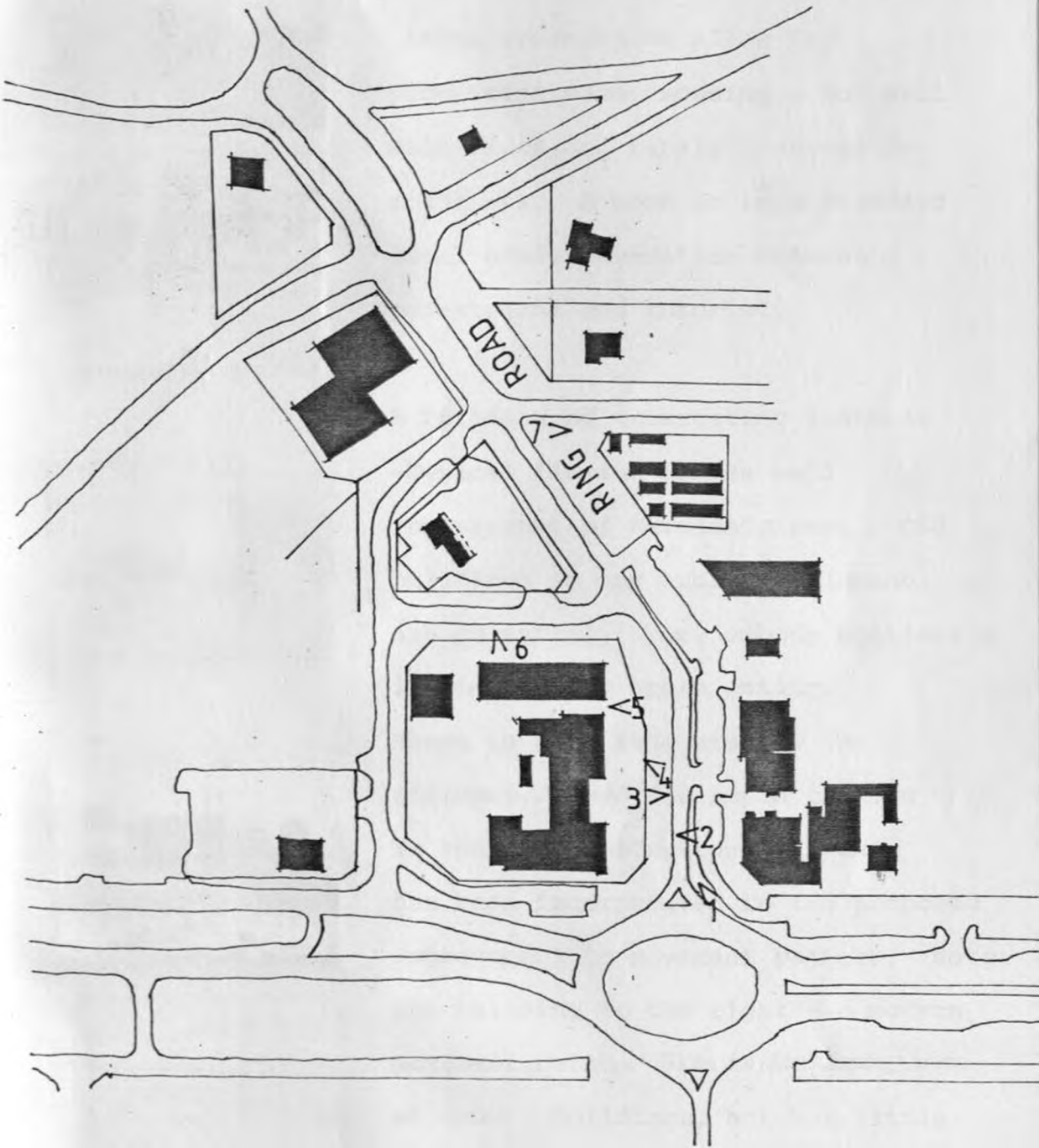
16

Panoramic view of Chiromo West of Ring Road. Most of the buildings are relatively new. The architectural style is reminiscent of modern movement. The spacing is more loose and generally unco-ordinated. This area can be considered less urban. All the buildings are 2 levels, i.e. humble in scale and therefore easier to relate to for the pedestrian.



17

The building, its shape, and colour colour scheme is all advertisement to the activities therein. No one can miss it.



RING ROAD Fig 6



1.1



1.2



2



3



4

Ring road a busy heavily congested road, especially at peak hours.

Note the heavy commercial vehicles evidence of the use of the road as a through road.

Zebra crossing to allow for pedestrian safe crossing - Not well maintained and rarely observed by motorists. A more or less standard local grade separation between pedestrians and motorist.

A building of interesting features - Typical Flemish gables wall reminiscent of Westlands past. Old buildings in any urban settlement are essential. They embody continuity in time of the urban entity.

Shops in this area are for the affluent. Need for ample parking is therefore understandable and has been incorporated in the proposed improvement to movement pattern. Note the building to the right - a modern movement relic. Size is in harmony with adjacent buildings, but has little contribution to the urban aesthetics.



5

This space should ideally be left for pedestrians, but true to the situation in Westland, it is a parking space. Its potential is its sense of enclosure.



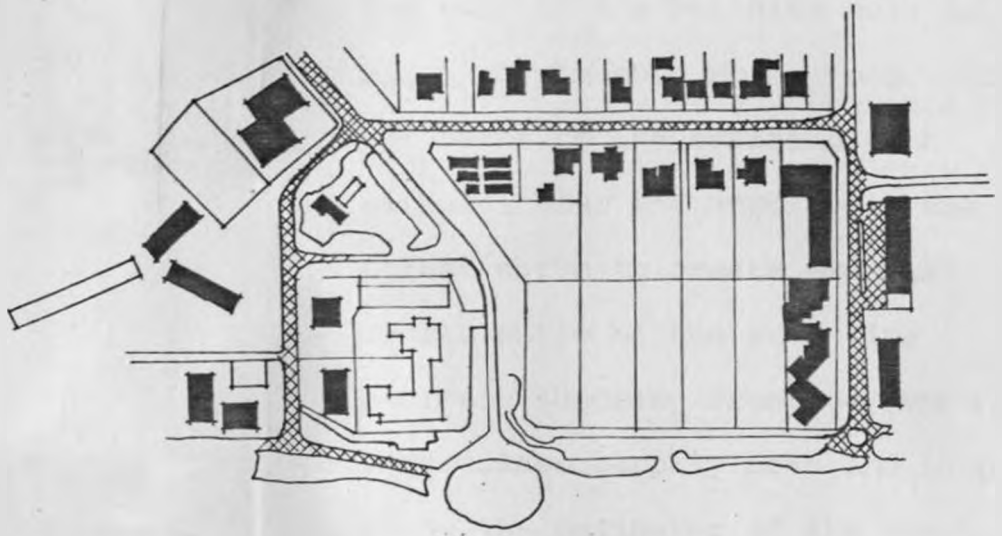
6

Open grassed space near the petrol station. Pleasant resting space especially under the shade. The observed intensity of the use at lunch hour underscores the need for more such spaces.

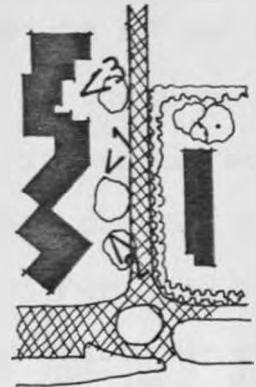


7

Market Area, all the market offers to the street is a blank wall. The presence of the wall does however form the background against which small informal activities like shoe shine, potrait framing shoe repair etc.,



MPAKA ROAD AND WOODVALE GROOVE ROAD Fig H



MPAKA ROAD Fig J

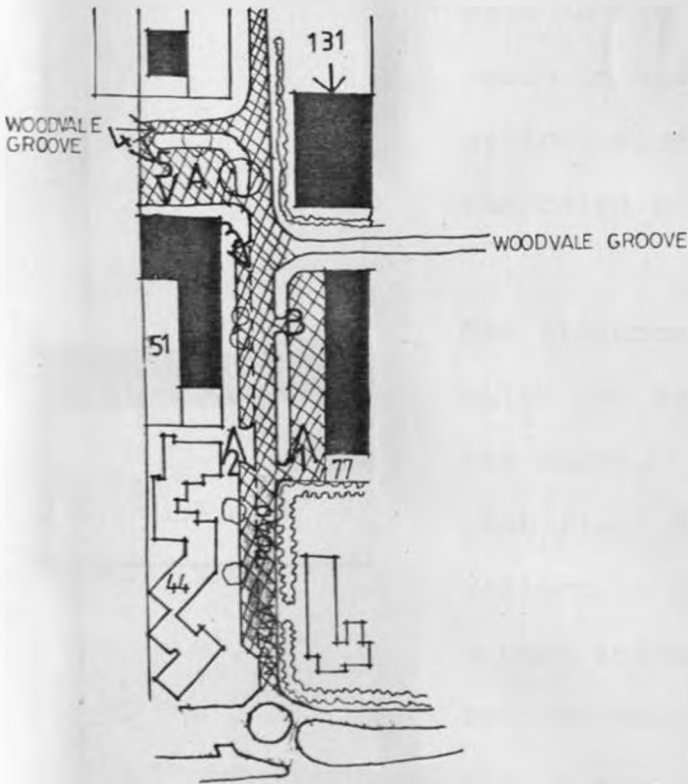


Fig K

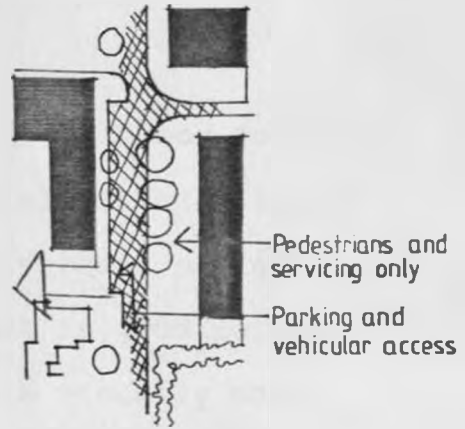


Fig L

The turn of the building acts to funnel people onto Mpaka road. The setbacks to the building both perpendicular and angular to the street serve to create external courts while at the same time increase shopping frontage (see Fig.J). Pedestrians happily move and shop along the perimeter of the court. The one storey height of the building is in proportion to the size of the court and allows for enough sun penetration. Trees provide for the shade. The street forms the horizontal edge to the court while the trees which provide for a subtle spatial articulation to the court define the third plane.



1

The treatment of the floor does not match the spatial articulation of the court. The precast paving slab floor finish is good in heat reflection and is visually monotonous as a much softer material should have been contemplated. Some more planting would be of influencing improving the space.



2



3

A magazine stand. The set backs encourage them. Note that the one above is so arranged as not to impede the pedestrian movement. There is no doubt it adds character to the street. These type of activities are inevitable. The urban designer might as well cater for them.

The staggered crossing between Mpaka and Woodvale Grove, see fig K and the subsequent decision to set back buildings on plot T7 and 51 to allow for parking unintentionally creates two articulate urban spaces by blocking the view from both sides of Woodvale Grove. There is however, need to create a balance between parking and pedestrian movement. At the moment car parking dominates the two spaces, A and B. That the two spaces owe their creation to the staggering of Woodvale Grove is reminiscent of the principle of the second man as enunciated by Edmud Bacon that "a strong idea has within it seminal forces capable of influencing subsequent development."



1



3



2



4



5

Space B. Vehicles dominate. The departmental store shown in photo 3 generates a lot of shoppers, if viewed as a shopping magnet at the beginning of a pedestrian shopping street, see "Movement Pattern, and Parking". Then there is a case for pedestrians dominating the space. See proposal in Fig. L.

The canopy helps to define the pedestrian domain while providing a place for hanging signs. In redevelopment of the plot, trees have been presented as an integral part of the street.

Area A. Parking dominates but is scantily used. The parking may be retained and extended as recommended in "Movement Pattern and Parking". The parking replaced in Area B can then be accommodated here.

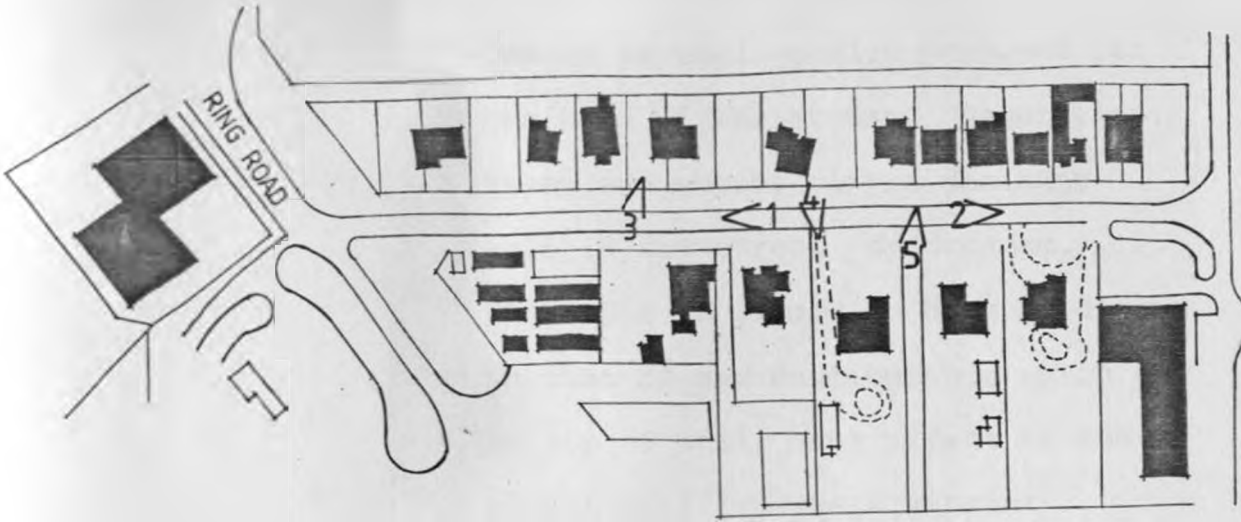
Front and back street.. The back provides for residents' parking, while the front provides parking for the public. The transitional space serves as the entry into the upper floors of the building.

WOODVALE GROVE EAST OF RING ROAD.

The plots on the north side are small. Redevelopment of a higher density will therefore produce a small grain and continuity to the street facade, with a consequent interest created by the multiplicity of the possible variation in architectural details. The street vista is enclosed in both directions. This enclosure both defines and articulates the street space and in the process accords the street sufficient visual capacity.

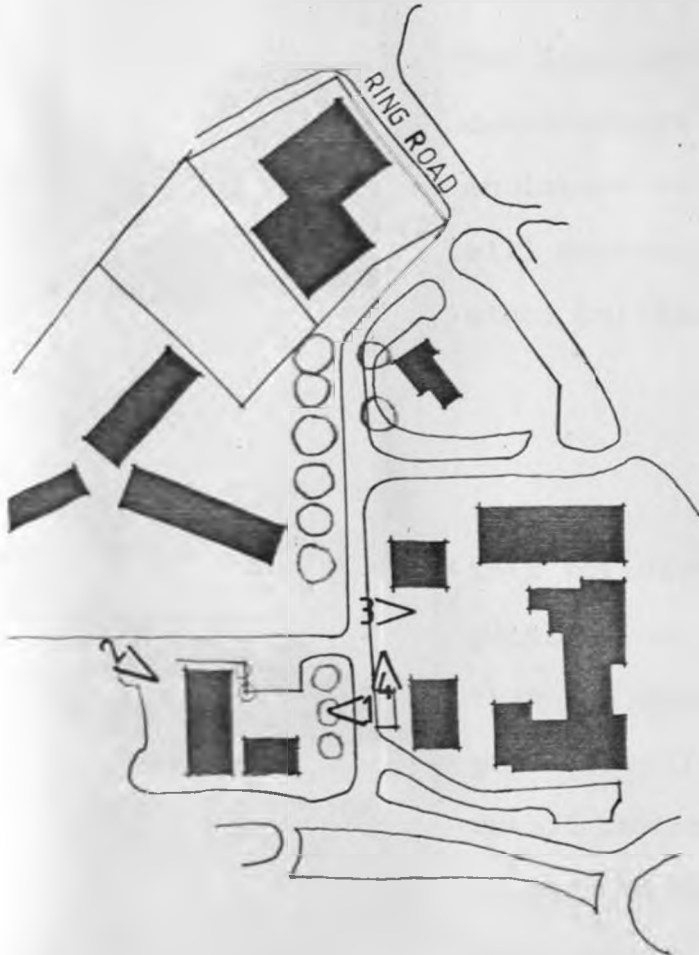
WOODVALE GROVE EAST OF RING ROAD

WOODVALE GROVE EAST OF RING ROAD



WOODVALE GROVE EAST OF RING ROAD

Fig. M



WOODVALE GROVE WEST OF RING ROAD

Fig. N



1

The turn of the building at the end gives dynamic quality to the street enclosure. (see fig M)

One is psychologically prepared for the turn of the street. Vegetation, trees and shrubs play a dominant role in the street definition.

This role is likely to be subordinate to that of new developments which on top of their mass effect to the street will produce a vibrant atmosphere on account of extra activities incorporated.



2

The four levels structure under construction will form a static enclosure to the street; it's size will however be in harmony with other buildings on the street.



3

This building is on two amalgamated plots. The risk of amalgamation is that the resultant building if poorly handled in architectural detail produces a monotonous effect counter to the possibilities in development on single plots.



4

A residential house with ample gardens. The pressures of the property market will in time force a demolition of such structures. The figural character of such buildings is counter to the unity of the street space. Their demise is therefore in the general interests of the street space.



5

An example of three plots with co-ordinated maisonette development. Here is a good example of development which although, comprehensive retains the grain of the street as prescribed by the plot size.

WOOD VALE GROOVE WEST OF RING ROAD

The buildings on this part of Woodvale Grove do not help in the street definition and therefore its sense of urbanity. Rather, the buildings join the intermediate spaces between them and the street is only a road - a subordinate space. Each building acts as a set piece and in that sense is figural in character. For the spaces created by the set pieces to have meaning in the urban context the physical boundaries sealing off each plot will have to be removed. The co-ordination of the economist group of buildings Picadilly circus London by Peter and Alis Smithson is a good exaple of how intermediate space can both be captured and utilized.



1

The space here is defined by two low key office blocks whose humble scale is in proportion to the space so defined. Trees play an important role in the drama of space. (see fig. N)



2

back facade of one of the building defining the above space. In general the buildings in this area are well handled in architectural detail.

Note the elegant use of brise soleil in achieving the intended good rhythm and proportion. Here an essentially utilitarian motif has been well applied for aesthetic ends.



3

The standard bank in my view is well handled architecturally; once again the brise soleil and the clay grill between form the major aesthetic features of the facade. Note the stone fence at the pict boundary. As suggested earlier it should be done away with. Only then can the shops in the two bigger blocks within the composition be entered from the space so defined by the composition.



4

Once again the two storey office block both accentuates the turn of the street and closes the vista. Without many buildings fronting the street, trees and shrubs become essential in definition of street space.

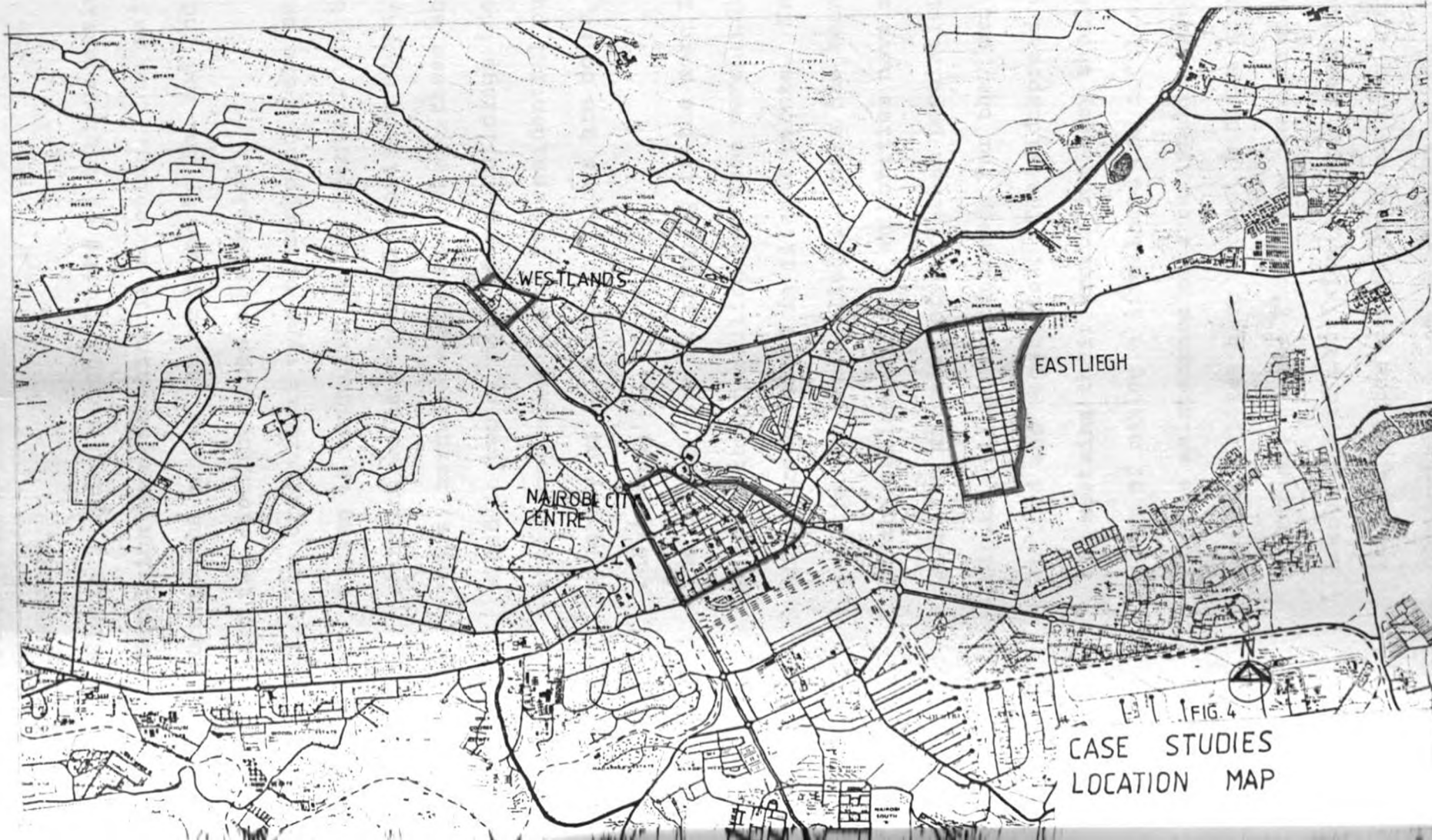


FIG. 4
CASE STUDIES
LOCATION MAP

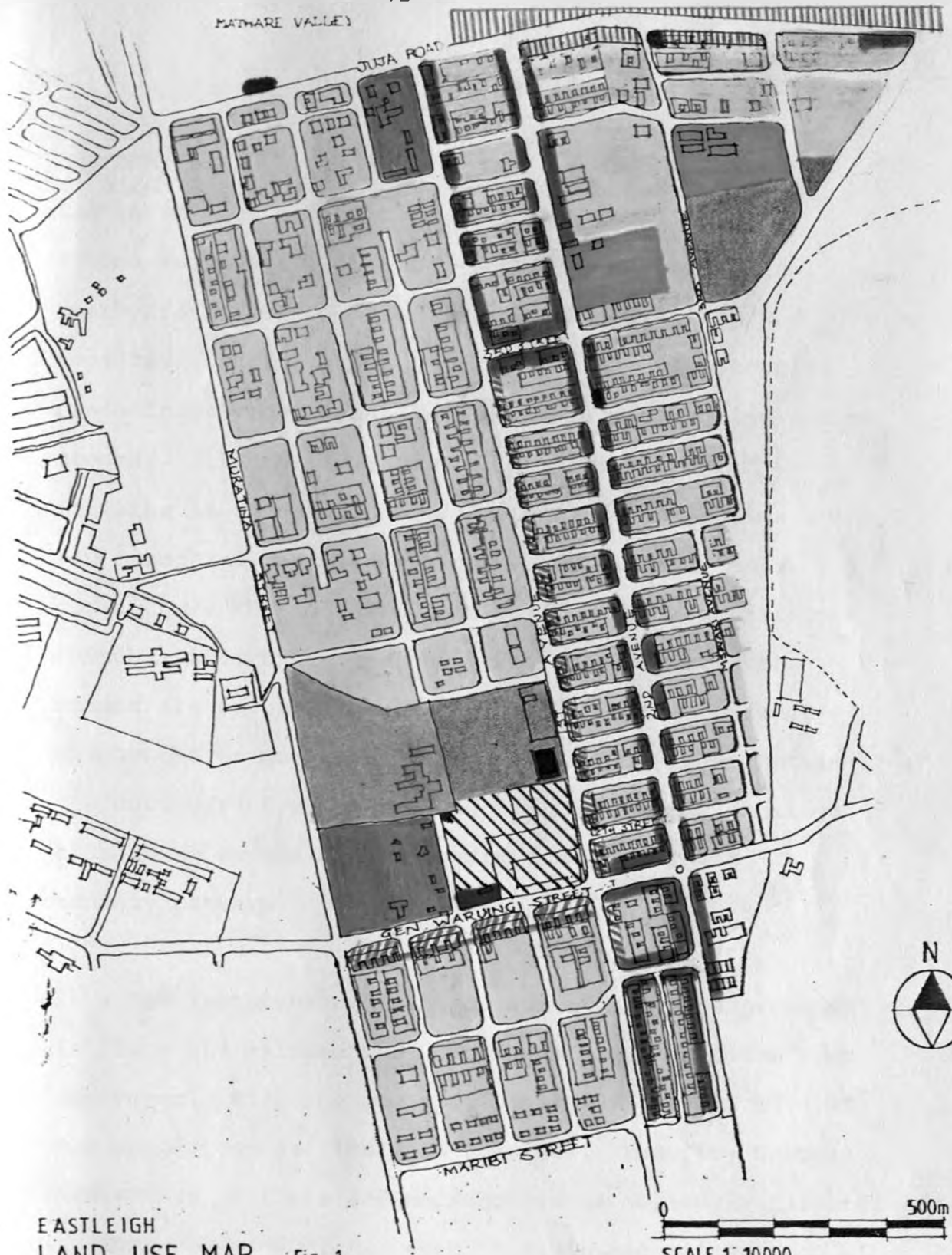
FUNCTIONAL ZONING

SHOPPING.

Figure 1 indicates the zoning of various activities in Eastleigh amongst which is shopping. The majority of shops occupy the central spine bound by 1st and 2nd Avenue. There are two distinct types of shopping:

1. The traditional type of shopping where selling and buying is conducted at the counter. In this class of shopping we have general provision shops, vegetable shops, hardware shops etc.; where these shops are provided in two or more storey buildings the upper floors are almost always used for residential purposes. The majority of this type of shops are to be found along 2nd Avenue.
2. The second type of shopping is the more informal type. These although selling the same merchandise as those above are provided in illegal kiosks. In the past the solution to these illegal kiosks has been the deployment of the bulldozer. The authorities have recognised that with the majority of our urban population poor, these kiosks will always mushroom for they provide the cheapest in food and vegetables. The widespread unemployment too sustains their growth for they should be viewed, as a way of making a livelihood and not business per se. For the maintenance of a reasonable level of hygiene, the authorities have set out minimum standards of construction. These kiosks are concentrated along 1st Avenue due to provision of ample road reserves. The location of the market in my opinion creates a commercial node which attracts kiosks.

MATHARE VALLEY



EASTLEIGH
LAND USE MAP Fig. 1

0 500m
SCALE 1:10000

KEY		% of total area		% of total area
	RESIDENCE	55.3		BUS DEPORT 2.3
	SHOPPING	5.7		PETROL STATIONS 0.3
	PROPOSED SHOPPING	2.4		PUBLIC OPEN SPACE 3.8
	MARKET	0.1		LIGHT INDUSTRIES 2.2
	SCHOOLS	3.4		
	SOCIAL /RELIGIOUS INSTITUTIONS	5.5		

RESIDENTIAL

Eastleigh was occupied in 1945 as a private low income residential district with traditional Asian courtyard houses to cater for extended families and tenants. Until Independence Eastleigh was occupied predominantly by Asian families in middle and low income groups. With the departure of most of the Asian families at Independence (1963) many of the houses are now owned and occupied by indigenous people. As a consequence the social economic situation and therefore tenancy pattern has changed. The majority of these houses are occupied by a few families and each family occupies one or more rooms. The flexibility inherent in the courtyard type of housing and the general shortage of housing in the city necessitates the emergent tenancy pattern.

In a few instances residential accommodation is provided in flats and maisonettes. This has occurred in the last few years. With the new plot ratio 1.5 instead of 0.75 the population is likely to increase. The City Council insistence on flats and maisonettes is obviously directed against overcrowding. But even in flats and maisonettes single room tenancy is not uncommon.

WORSHIP.

There are a total of 3 churches and 5 mosques in Eastleigh. There is a distinct difference in location of mosques as opposed to churches. Mosques are well integrated into the residential areas and

where located along the street are a part of the street and therefore entered directly from the street. This is not surprising because Islam as a religion is well integrated into the culture of those who practise it. Churches on the other hand are located on large fenced off plots and in that sense in their own precincts. This is true for all churches even those located along the main streets.

The three churches incorporate institutions of learning thus St. Theresa Boys is located within the precincts of St. Theresa Church. Eastleigh secondary school is located adjacent to a church precinct. The Pentecostal church is constructing an institution of learning within its precincts. Mosques, on the other hand provide only for worship except for one mosque along 2nd avenue which provides for learning of an Islamic nature. To the community at Eastleigh therefore churches have a wider social significance. Mosques on the other hand only cater for the needs specific to the Islamic community.

Another important conclusion is that while mosques generally serve population local to Eastleigh, churches serve a catchment population beyond Eastleigh. This conclusion is confirmed by observing the spread of the flock after church on sundays.

MARKET.

There is only one market as indicated in fig 1 in Eastleigh. It is located in an area delineated for community facilities. In the main it is a plot which has been subdivided into subplots. Each subplot has been provided with a raised concrete floor. The circulation area is paved. On each subplot allottees have constructed stalls. Its location along 1st avenue and not 2nd avenue is fortunate for in this way it avoids congestion both pedestrian and vehicular which is prevalent on 2nd avenue.

The congestion inside the market and the hawkers on push carts on the roadside suggests that the number of stalls provided is not adequate. Indeed, there is every reason to suggest that Eastleigh requires another market or an elaborate expansion of the present one.

Delivery of goods in the market is mainly on push carts and pick ups. While push carts can easily park on the pavement the surface is not appropriate for pick ups especially on rainy days. A hard surfaced servicing yard as opposed to servicing from the road is to be preferred. The problem of servicing is further compounded by the exit from the omnibus depot adjacent, and a bus stop on the market side of 1st Avenue. This problem underscores the need for separate servicing yard especially if expansion is contemplated. In a separate servicing zone refuse collection could be more appropriately located.

Although the majority of people patronizing the market are pedestrians, the number of cars parked along the road near the market, 20 - 30, is a clear indication of a specific requirement for parking that could best be provided in a pool as opposed to roadside parking.

The haphazard use of materials and un-controlled design to the market stalls produces a dark congested environment inside the market. This is neither advantageous to the sellers nor to buyers. Here is a case where standardized design with supervised erection could have made all the difference. The recent radical improvements to informal kiosks, internal and as built form within the urban environment in Nairobi is a precedence to be emulated.

No matter how well the market is provided for there will always be some sellers who prefer to sell outside the main market. This is true for the markets in CBD, Westlands and smaller towns like Limuru, Kiambu and Thika. It is my contention that this requirement can be satisfied by the provision of a market square. In Eastleigh this possibility can be exploited on the vast space between the social hall and the market.

BUS DEPOT

This is the central depot for all buses owned by the Kenya Bus Service, KES, operating in the Nairobi City region. The depot and its location are a source of much traffic congestion especially along General Waruingi road at peak hours. The bus depot is essentially

an industrial activity. It caters for the maintenance and storage of the fleet. Its location in respect to Stewart square is in contradiction to the more social facilities located here.

A much more important observation is that the bus depot is not a facility specific to Eastleigh. It was located in Eastleigh because Eastleigh was at the extreme outskirts of the city and what is more Eastleigh is located in the Eastern area of Nairobi largely inhabited by the low-income population who are predominantly dependent on public transportation. The availability of land must have been a consideration too. The reasons for this location are no longer valid. Eastleigh is no longer peripheral in respect to the city region and the demand for public utilities land to Eastleigh is very high. The location of the depot in Eastleigh is neither ideal for the city's public transportation system, nor in the general interest of Eastleigh residents.

The never ending demand for increase in public transportation is likely to aggravate the congestion in the depot and its outlets. For this reason, the proposal for two more depots at the two extremes of the city, Dandora Industrial complex, and Kawangware is more than welcome. The two depots should be sufficiently elaborate that the depot at Eastleigh becomes redundant. Short of this possibility another depot in the industrial area city centre should be contemplated. The depot at Eastleigh can then be converted into sports - cum-

community centre. The large spans and the high level of the roof would in my opinion accommodate this conversion; Stewart square would then incorporate community facilities and in that sense act as the social heart of Eastleigh.

LIGHT INDUSTRIES

These comprise an important sector as far as employment is concerned. The main activities under this category of industries are, car repair workshops and open yards, furniture workshops, metal workshops, bicycles repair workshops, and a few crafts workshops. Below are some observations pertinent to light industry concerns as prevalent in Eastleigh.

1. Car repair workshops or open yards are generally located on undeveloped plots. The majority of these yards seem to be located within or near the commercial central spine. The fact that most of the cars are concentrated within the central spine is a good explanation for this. Except for one instance along 1st Avenue where there is a car repair yard, no car repair workshop or yard fronts the main commercial streets.
2. Light industrial activities are not concentrated in any one zone. One notes, however, that the majority are located along Juja road as indicated in Fig. 1. A linear, informal market exists along the northern side of Juja road.

The market and the availability of many vacant plots on the opposite side in my opinion explains the location of these industries along Juja road.

3. Most of the goods made in these workshops are household goods like kerosine lamps, jikos, furniture, sufurias, building components, metal doors, windows etc. In most instances they are marketed on the site of the workshop. This implies a reasonable accessibility for both pedestrian buyers and the servicing vehicles.
4. There are a few informal kiosks, those with ample space, which can be classified under this sector. These stalls make furniture mainly. There are no stalls used as workshops near the market. This in my opinion is due to lack of space at the periphery of the market. In almost all markets in Nairobi where there is ample space, light industrial workshops develop. The Nairobi City Council has recognised this inherent relationship and has provided for planned light industrial developments near Kikomba market at the periphery of the city centre. Markets in Nairobi produce the highest concentration of people all year round. Workshops within the market precincts benefit from this concentration. Workshops especially those that produce cheap articles for the low income population normally consider themselves

as part of the markets. They cannot be accommodated within the market structure because of differing spatial requirements.

Petrol Stations

There are four petrol stations within Eastleigh as indicated on Fig 1. Apart from the petrol station located along 2nd Avenue all the petrol stations are located along arterial roads and in that sense appropriately located. If one accepts the principle that garages and petrol stations should not be located on an inner loop or ring road and that if possible should be located near pooled parking lots, then the location of a petrol station on 2nd Avenue is inappropriate. It is inconceivable that 2nd Avenue can be freed of all vehicular traffic. My on the site observations do not indicate that traffic congestion as a result of the petrol stations is any more than that produced by roadside parking. I would recommend for its retention. Perhaps, the fact that many heavy commercial vehicles which would otherwise park along residential streets park here mitigates well for its retention.

MOVEMENT PATTERN STRUCTURE AND PARKING.

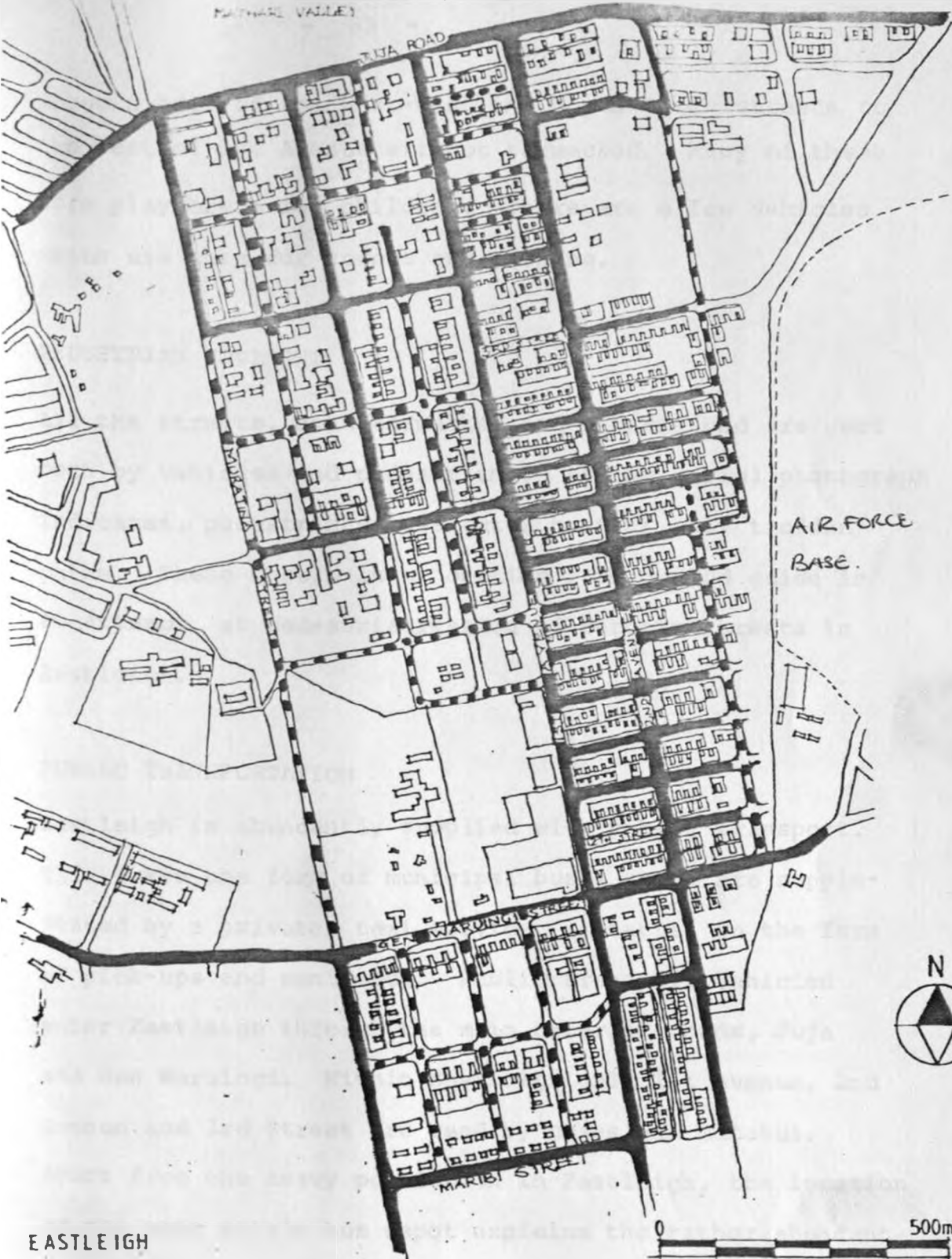
VEHICULAR

The major arterial roads in Eastleigh are Juja and Gen Waruingi roads. Juja road is very congested especially at peak hours. This is because it is the major link to Eastlands (the most densely populated area of Nairobi) from the city centre to the North-East. Gen Waruingi is also as congested at peak hours. Being the shortest route to the city centre, it is favoured by most motorists to and from Eastleigh. The location of the bus depot along Gen Waruingi road also contributes to congestion.

The 1st Avenue is the major through road and also the major residential distributor in Eastleigh. 2nd Avenue serves as a through road but lower in hierarchy to 1st Avenue. The majority of commercial activities are located along 2nd Avenue for which reason it is the most congested and active of the streets. It is reminiscent of the English high street. Muratina road could be described as a through road because it links the two arterial roads. Its state of repair however precludes it from performing such a function.

1st and 2nd Avenues are well linked by short residential access roads. The majority of these are in good state of repair. These streets continue to the East of 2nd Avenue. They vary in length and are dead ends. They are, nevertheless linked by a major pedestrian artery which runs along the Eastleigh boundary with the Airforce base.













MATHARE VALLEY



EASTLEIGH
ROAD PATTERN Fig. 2

0 500m
SCALE 1: 10000

KEY

	TARMACED ROADS	
	UNTARMACED ROADS	
		
		
		
		

About a half of the East-West and North-South streets to the west of 1st Avenue are not tarmacked. Many of these form play areas for children. There are a few vehicles which use them for access and parking.

PEDESTRIAN MOVEMENT

All the streets, both tarmacked and untarmacked are used both by vehicles and pedestrians. As the aerial photograph indicates, pedestrians have cut a host of well trodden paths. These should in my opinion form a good guide in an attempt at pedestrianization of certain streets in Eastleigh.

PUBLIC TRANSPORTATION

Eastleigh is abundantly supplied with public transport. This takes the form of municipal buses which are supplemented by a private taxi service (matatus) in the form of pick-ups and omnibuses. Public transport vehicles enter Eastleigh through the main arterial roads, Juja and Gen Waruingi. Within Eastleigh only 1st Avenue, 2nd Avenue and 3rd Street are used by buses and matatus. Apart from the heavy population in Eastleigh, the location of the main city's bus depot explains the rather abundant supply of public transport. All buses stay overnight either at the city centre terminus in the CBD or at Eastleigh. They therefore have to pass through Eastleigh to and from their schedules and naturally ferry a lot of people to and from Eastleigh over and above the number

ferried by the normal Eastleigh routes.

Apart from the main depot, there is a major bus stop near the junction of 1st Avenue and 3rd Street. The normal Eastleigh routes wait for their schedules at this stop. It is a major cause of traffic congestion along 1st Avenue.

STRUCTURE

The basic structure of Eastleigh is orthorgonal with the 1st Avenue forming the assymetrical structural axis. To the East of 1st Avenue the blocks are 70 x 140 m with East-West orientation while the plots have a North-South orientation. In almost all cases each block is further subdivided by a service lane. Blocks to the West of 1st Avenue are 90 x 180 m. They are North-South in orientation while the plots are East-West in orientation. The majority of the blocks have no service lanes. There is, however, a mandatory requirement for sewer way leave on each plot. The variation in structure between the West and East of 1st Avenue does not appear to be based on any rational premises other than that one was laid earlier than the other.

The grid does, however take a turn to echo Juja Road. In so doing it provides for a circumstantial variation to an essentially orthorgonal grid structure of Eastleigh. Whilst the Eastleigh boundary with the Airforce base does not alter the orthorgonal structure, it does trim it



EASTLEIGH
LOCALITY AIR PHOTOGRAPH



SCALE 1:10,000



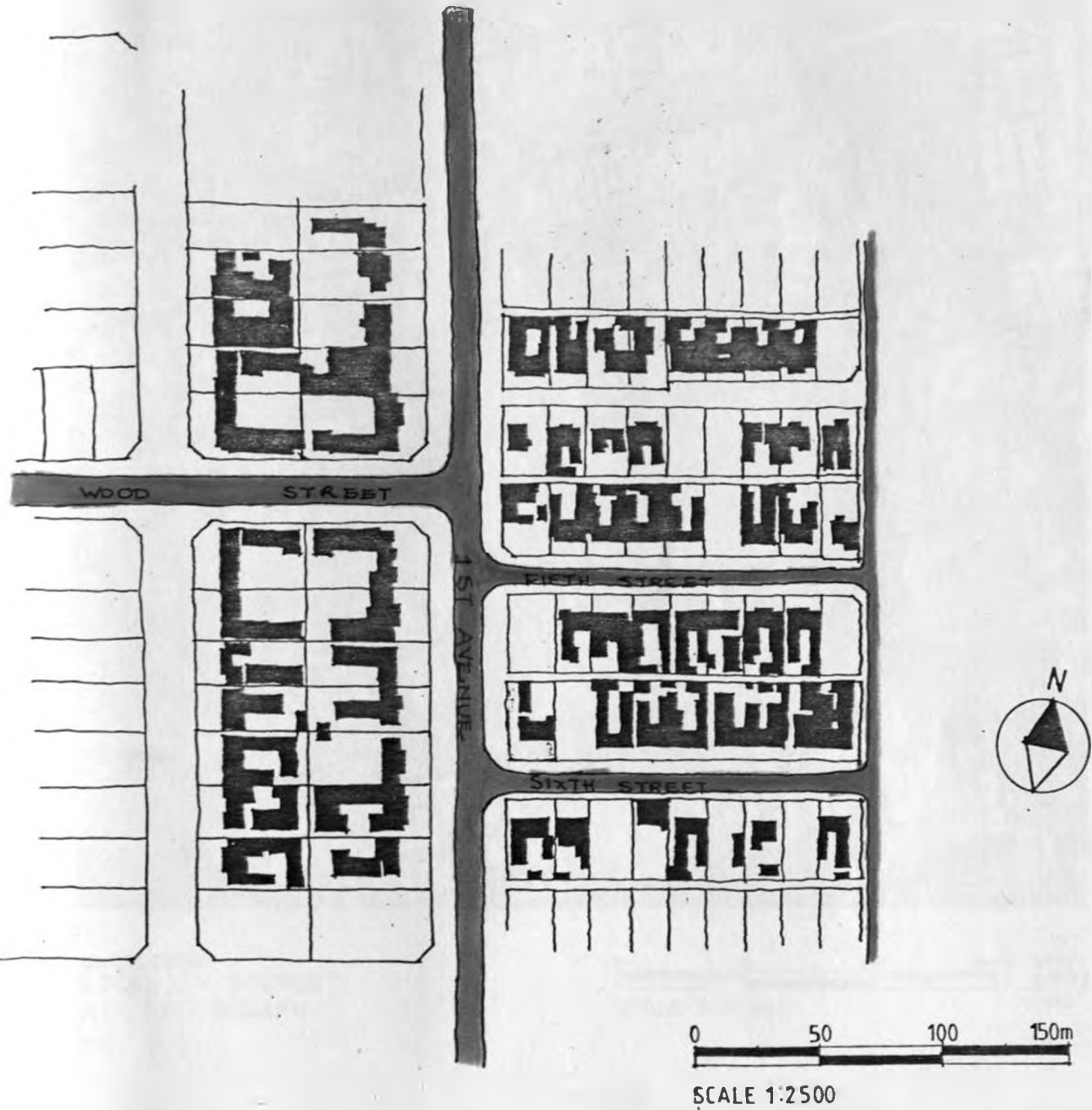
FIG. 3.1

off and in the process alters what would otherwise be a rectangular to a near trapezoidal urban form.

Of significance are two large blocks, one along 2nd Avenue and the other along 1st Avenue. Although these blocks are much larger than ordinary blocks, they are nevertheless multiples of the smaller blocks. It is for this reason that they fit well within the overall structure.

The essentially orthogonol plan has proved sufficient for ordered growth. Growth in Eastleigh started as individuals developed their own plots within the area bound by 1st and 2nd Avenue and extended outwards. At the initial stages therefore, growth was by extension. Due to constraints imposed on Eastleigh by the surrounding districts further growth will have to be by accretion. In appreciation of need for further growth without available land, the city council has accommodated for growth by accretion by increasing plot ratio from 0.75 to 1.5.

The main problem with Eastleigh structure is lack of an organism for growth. If compared to Savannah (although a much bigger urban entity) the basic difference emerges. Although Savannah was designed on an open grid iron structure similar to Eastleigh, inherent in its structure is a basic cell. Each one of these cells contains twelve blocks and a central square. The cell provided not only a module for growth by extension but also by accretion. Such a cell, a practical-device for allowing urban growth



EASTLEIGH-DETAIL OF THE STRUCTURE Fig 4



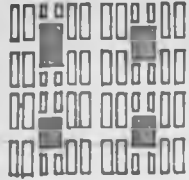
EASTLEIGH
LOCALITY SEGMENT:
AIR PHOTOGRAPH

FIG. 4.1

0 50 100 150m
SCALE 1:2,500

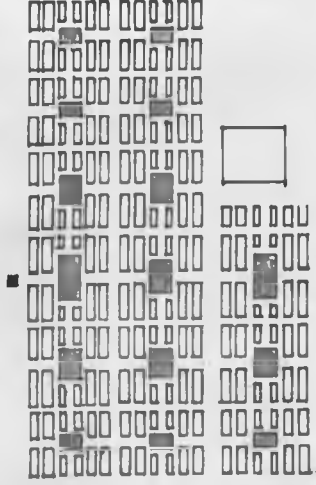


1733

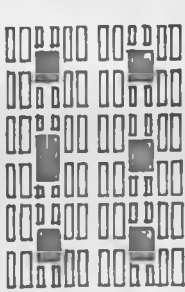


1735

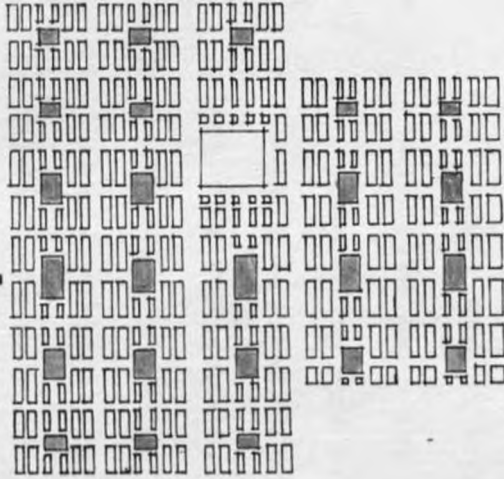
1815



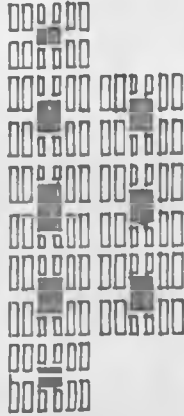
1856



1790



AFTER 1856



SAVANNAH DESIGN

STRUCTURE

FIG 5 SCALE 1":19000

and urban spatial articulation is lacking in Eastleigh. Although it is possible to achieve urban spatial articulation without an organism for growth, when one is present the problem of articulation is made that much easier. The sense of being in any one such organism concretizes one's existential image of an urban domain.

PARKING

The main commercial street is very congested largely because of parking. Pedestrians compete with cars for the pavements. In the more residential streets the situation is not as bad. The few residents who have cars park on the front gardens. A few cars and tankers nevertheless park along the pavements.

It is a very peculiar situation that a majority of heavy commercial vehicles whose destination is Nairobi park in Eastleigh. This is for a number of reasons. One, many of the drivers for these vehicles are in Nairobi for short periods of time. They therefore consider the low rents and the single room tenancy conducive for their short stay. Two, many of the drivers are Kenyans of Somali origin. Here I should point out that Eastleigh is a popular residential place for the Kenyan Somali. While these drivers wait for their return journey to Mombasa, our major sea inlet, they naturally prefer to live with their families in Eastleigh. The fact that some owners live in Eastleigh also influences the location of these vehicles. Three, the ample space available in

Eastleigh no doubt encourages these vehicles to park there. Both the tarmaced and untarmaced streets are as a result in bad state of repair due to excessive undesigned for weight imposed by these vehicles.

PROPOSAL FOR IMPROVEMENT TO MOVEMENT PATTERN

There is neither need, nor is it possible to contemplate any significant structural change to the road pattern in Eastleigh. Improvement to vehicular and pedestrian circulation will depend on the improvement of the physical condition of roads, pedestrianization of certain sections and a reorganization of vehicular flows. Below are some proposals for improvement to movement pattern.

1. EAST OF 2ND AVENUE

One of the reasons why 2nd Avenue is congested is that it serves both as the main shopping street and a residential distributor. The function of 2nd avenue as a residential distributor to the East of 2nd avenue can be reduced by the introduction of a route which links Juja and Gen Waruingi as indicated on Fig 6. The structure allows for this but the route will have to be tarmaced. If a few of the East West streets are blocked as they enter 2nd avenue to vehicles and not pedestrians, vehicles will be forced to use the route so established and in the process relieve 2nd avenue of some vehicle traffic. Fig 6 summarises how the proposals can be effected. Not all East west streets are blocked. Every fourth East West street is linked to 2nd avenue. This allows for the essential link between the route established and 2nd avenue. It is conceivable that as Eastleigh becomes more and more a commercial centre for the surrounding area as opposed to a residential district, commercial activities will not only be restricted to 1st and 2nd avenue but will inevitably spread to the East West streets and hence the need to link 2nd avenue to the new route.















EASTLEIGH

IMPROVED MOVEMENT PATTERN Fig 6



SCALE 1: 10000

KEY

	VEHICULAR MOVEMENT	
	PEDESTRIAN MOVEMENT	
		
		
		
		

The major pedestrian path to the East of 2nd avenue introduced respects the well trodden path as can be seen in the aerial photograph. Fig 3.1.

2. WEST OF 2ND AVENUE

While the hierachy between 2nd avenue 3rd avenue and Mswaki road can be established by the above proposal, this is not the case between 1st and 2nd avenue. With the development of Muratina road these two avenues are bound to be equal in hierachy. In such an event, there would be no justification of blocking all East-West streets at either 1st or 2nd Avenue. My proposal for improvement therefore, attempts at both satisfying the need to restrict the vehicular link between 1st and 2nd Avenue to only a few of the East-West Streets, and to maintain the possibility of an equal hierachy between 1st and 2nd avenues. This has been achieved by converting the East-West streets into cul-de-sacs and arranging for their entrance to be from 1st and 2nd Avenue alternatively. These cul-de-sacs will provide both for residential play space and parking. Some shoppers can also park on these cul-de-sacs and in that way ease vehicular congestion on both 1st and 2nd Avenues.

3. WEST OF 1ST AVENUE

This area Stewart square apart, is predominantly residential. As Fig 2 indicate, the majority of the streets are not tarmacked. Fig.6 summarises the proposal for improvement to pedestrian and vehicle circulations to the west of 1st Avenue. The main

proposals for improvement are:-

1. All the tarmacked roads have been retained for vehicular circulation. This is because they form the major linkages to through roads. It is not surprising, therefore they were the first to be tarmacked.
2. All Muratina street should be tarmacked and widened to allow for two lanes. Muratina street and not 1st Avenue would then be the major through road. There is no doubt that a substantial number of cars would divert to Muratina Street and in the process relieve congestion to streets internal to Eastleigh. In the event that Muratina Street becomes the major through road then 1st and 2nd Avenues can be converted to a one way inner ring road.
3. While the general structure has been retained, it has proved prudent to leave certain parts of streets to pedestrians only. The intention here is not to provide for pedestrian paths per se, rather these spaces are intended to be open play spaces for the cluster of residential units that surround them. Most of the parts left as play spaces happen to be those not tarmacked now. This has obvious economic advantages.
4. There are a few cul-de-sacs direct from 1st Avenue contrary to the intended hierarchy. These cul-de-sacs should be viewed as parking lots off 1st Avenue for both shoppers and residents.

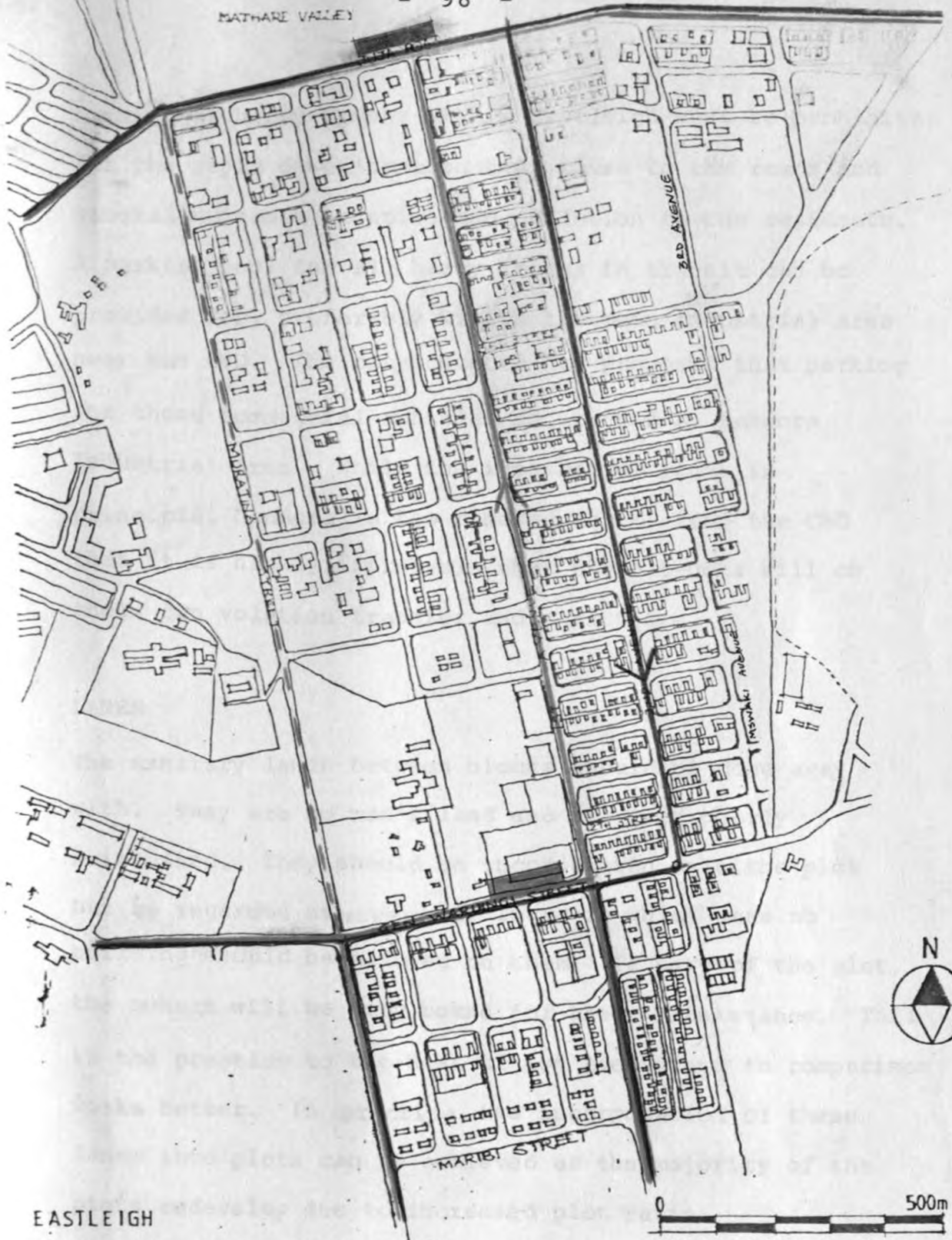
BUS ROUTE.

While at the moment it would appear plausible to concentrate all buses on 1st avenue on account of its function as a through road the imminent commercialization of 1st avenue calls, for a rethinking of such a move. The inherent relationship between bus routes, and commercial streets and the implied congestion in both vehicular and pedestrian terms, to me, suggests that buses should evenly be distributed between the two streets. This can take the form of a one way bus route on each street much as has been indicated on Fig 7. The zone used by buses while waiting for their schedule as indicated on fig 7 should be split into two and relocated along Juja and Cen Waruingi street for buses along 1st and 2nd avenues respectively. This recommendation is on account of the evident congestion caused by the present location of the zone.

If and when Muratina road is completely tarmacked, there would be sufficient reason to free 2nd Avenue of bus traffic and concentrate them along 1st avenue and Muratina street.

PARKING.

The city council in an effort to increase the provision for parking for residents has recommended that on redevelopment, each plot should accommodate parking at the rate of 1.5 times the number of residential units. Whereas one understands the need for increased provision for parking, the additional parking need not be provided on the plot. As I have indicated on my proposal for improvement to communication pattern, parking should be provided in pooled parking lots (See Fig 5).















EASTLEIGH

PROPOSED BUS CIRCULATION Fig. 7

0 500m

SCALE 1: 10000

KEY

	ONE WAY ROUTE THROUGH 2nd AVENUE	
	ONE WAY ROUTE THROUG 1st AVENUE	
	MAJOR BUS STOP	
	MAJOR BUS STOP	
	FUTURE BUS ROUTE	
		

Parking of heavy trucks within Eastleigh must be prohibited for the rapid deterioration they cause to the roads and general nuisance in noise and pollution to the residents. A parking pool for all heavy trucks in transit can be provided for, preferably within the main industrial area near the CBD. The city council has proposed that parking for these commercial vehicles be located in Dandora Industrial area. While the idea may be right in principle, Dandora is too removed (9 km) from the CBD that it is highly improbable that these trucks will on their own volition transfer and park there.

LANES

The sanitary lanes between blocks should be done away with. They are no man's land and are very poorly maintained. They should be incorporated onto the plot but be regarded as sewer way leave in which case no building should be allowed on them. If part of the plot, the owners will be duty bound for their maintenance. This is the practice to the West of 1st Avenue and in comparison works better. In practice, the incorporation of these lanes into plots can be achieved as the majority of the plots redevelop due to increased plot ratio.

BUILT FORM AND TOWNSCAPE

Fig 8 gives a summary of the different classifications of built form within Eastleigh. This classification is general and buildings whose quality in imageability or townscape terms is of special significance will be given special treatment.

AREA A

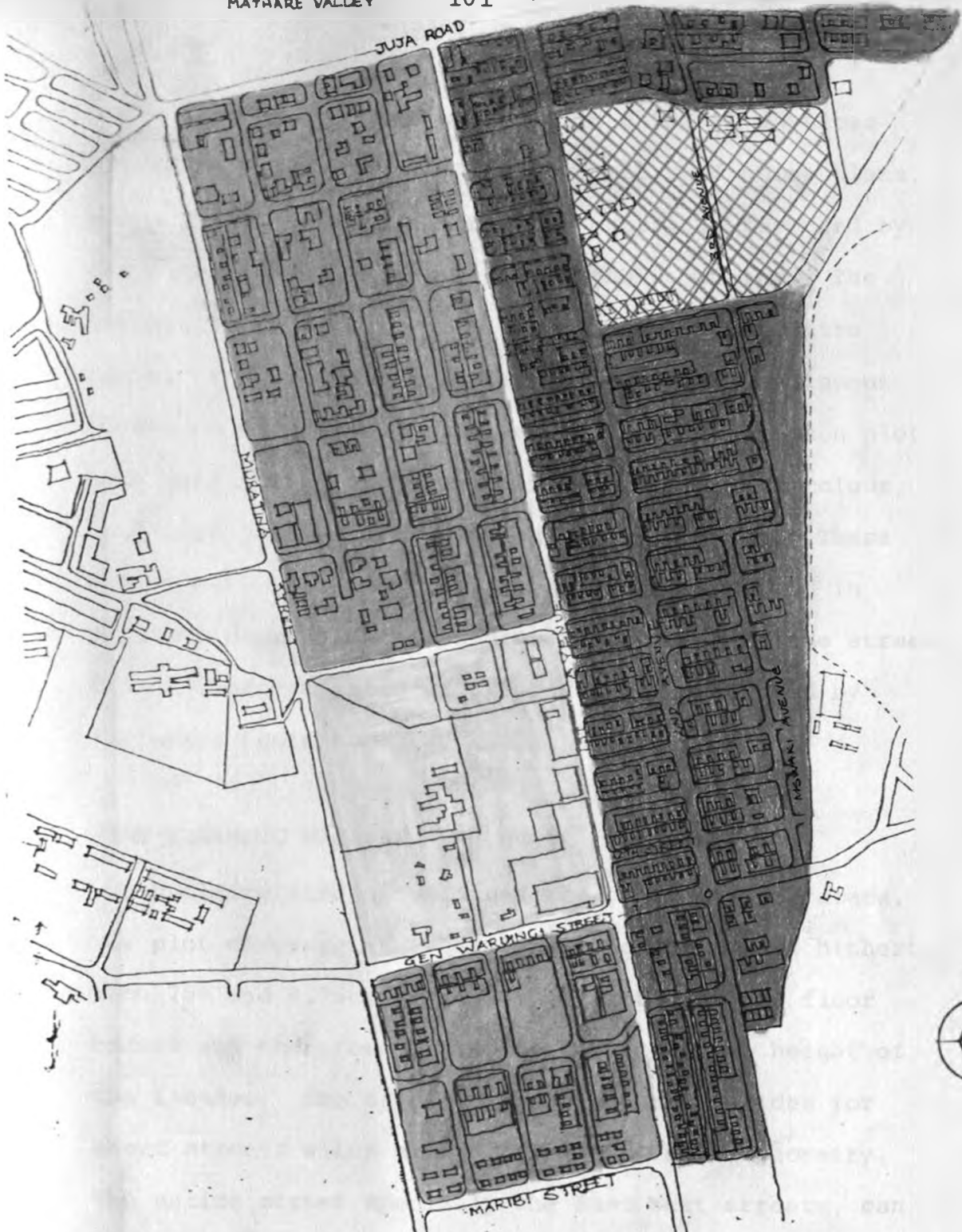
This area forms the thematic core of Eastleigh. The character of the built form is born out of the following factors.

1. PLOT SIZE

The plot, whose size is 15 x 30 m is comparatively small especially when compared to the length of the street, see Fig 6. The plot, therefore, forms the elementary small grain in respect to the street. What is more, most of the plots are owned by different people and have been developed individually. The danger inherent in large units which 'prevent the street from preserving the varied continuity which is its essence' has therefore been avoided. With small plot subdivisions, the potential of the street facade appearing as a varied repetition of the same theme has been presented.

2. ARCHITECTURE

The architectural style has been very strongly influenced by the residents who until recently have been Kenyans of Indian origin. This fact is very strongly imprinted on















EASTLEIGH
BUILT FORM

Fig 8

SCALE 1: 10000

KEY

	AREA	A	
	AREA	B	
	AREA	C	
	AREA	D	
			
			

the built form both in plan and in external physical manifestation. The predominant court yard house plans, where rooms are entered from the court, is favoured by the extended family structure of the community. The pitched roofs in almost all cases slope towards the court. The facade therefore, forms a very continuous plane. Although very similar, the facades on each plot have very subtle differentiation on account of colour, roof line, texture, decorations and materials. These differences give spontaneous but minor variation in physical expression and therefore interest to the street facade characteristic of group form as described by Professor Fumihiko Maki.

TOWN PLANNING BYE-LAWS AND URBAN STRUCTURE

The building line establishes the plane of the facade. The plot coverage and the plot ratio which have hitherto been 75% and 0.75 respectively dictate for one floor houses and therefore a more or less constant height of the facades. The orthorgonal structure provides for short streets which are simple and clear in geometry. The entire street specially the East West streets, can therefore be visually grasped at once.

All the above observations have been given further elaboration by the following photographic survey and commentary.



1

Typical street. Note how articulate the street facade is. Note that all buildings are one level high with small variations in the heights of parapets. All these buildings were developed individually. The style therefore indicates similar social cultural forces in the evolution of built form.



2

Some of the streets are not tarmacked. Note how adversely lack of tarmac affects the street space in terms of articulation. As the kiosk at the end of the street indicates (see photo 3.), commercial activities (informal) continue undeterred by the condition of the road.



3



4

Photo 1 and 4 indicate the difference tarmacking makes to the street space.



5

Typical house next to a vacant plot. Note the parapet of the facade rises well above the highest point of the roof. This is for

aesthetic and not utilitarian reasons. As photos 1 and 4 also indicate this is the characteristic way in which front parapets are stepped down to the level of the roof.



6

The side walks are used for kiosks and parking. The mushrooming of kiosks along these streets point towards commercialization of some of the residential streets - as the plots redevelop. Parking along side walks indicates lack of public parking spaces in this area.



7

Scene along 3rd Street. Note servicing is from the shop front. The building at the far end is a mosque but incorporates some shops. Along commercial streets the canopy is a predominant feature, to protect the window display and shoppers against the glaring tropical sun and rain.



8

The market closes the vista. The tea kiosk is a direct result of the market location because the market guarantees a high concentration of people. As mentioned earlier, heavy trucks like the one parked along the side walk is a common feature in Eastleigh. This is at the expense of rapid deterioration of both roads and side walks.



9

The two storey building at the fore, fronts 2nd Avenue. This is not an unusual situation. The ground floor accommodates shops while the upper floor accommodates residents. The scale of the built form in this area forms the gradient between an essentially commercial street and essentially residential street.



10

Typical East West street view looking towards East of 2nd Avenue. Note the street lacks an element for vista closure with the result of an inarticulate street space.



11

View looking towards West of 2nd Avenue. The unco-ordinated nature of the urban structure between Area A and B see Fig 3 and Fig 4 staggers the streets, with a resultant closure for most of the vistas in this direction. The consequent existential street space is concretized by the street spatial articulation provided by the end piece. In terms of resulting urban space the unco-ordinated nature of urban structure between Area A and B has a lot to its merit. The above street is to the South of Gen. Waruingi Street and has been converted to a commercial street.



12

Typical facade and front garden fence details reminiscent of an Indian bazaar.



13



14

A new building but retains the general character of this area, especially the parapet detail.



15

This entrance arch is not a common feature of houses in this area. The arch and the seats at the entry are borrowed from Kenya coastal Swahili culture.



16

A maternity clinic. This building occupies two plots. The resulting built form of course does no harm but is a relief. Social amenities in Eastleigh have been provided while retaining the urban structure.



17

A health centre in Area A. This building occupies two plots. All the above comments apply.



18

Typical services lane. These are dirty no man's land. As I proposed elsewhere, they should be discouraged. Note lack of play space renders them useful as children play-space.



19

Note a vacant plot in residential area is being used for motor garage. That is, an essentially residential street is slowly being commercialized.



20

This is a very new building. The character is not in keeping with most of Area A. This is because of a few reasons, one, the area now is predominantly occupied by Africans so the social cultural forces behind the evolution of built form are different. Two, the new buildings are mainly for renting. Three, these buildings are often tailored by architects who are sometimes accused of 'trying too hard.'

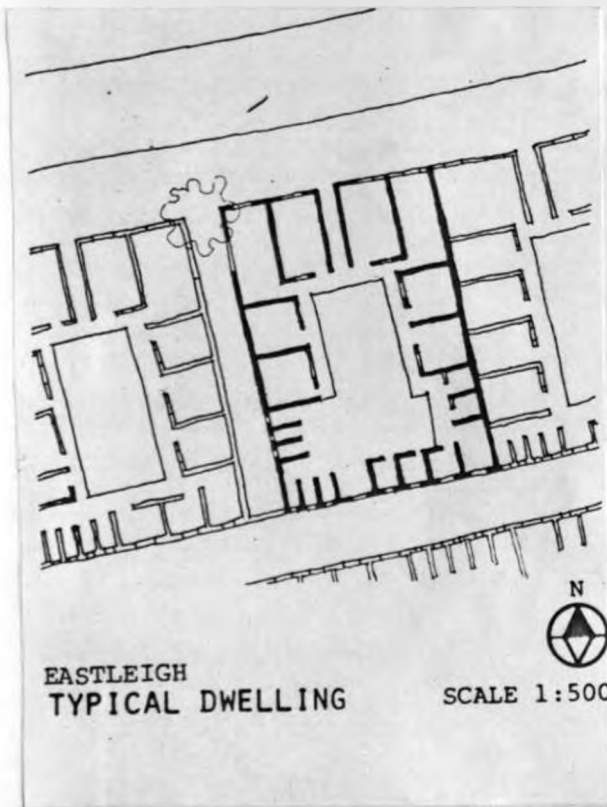


21

In some of the streets where cars are minimal like this one, I feel there is a case for providing a hard surface, good enough for pedestrians, children's play and the occasional car.



View looking towards the court yard of a typical house. The court yards were originally intended for washing, drying clothes and food preparation for extended families. With the new tenancy pattern the court yard is still used for similar activities but by different families.



2. Typical house plan .



3. Typical street scene. The front gardens are used for parking, side walks for pedestrians and, for lack of an alternative, children play space.

AREA B.

Area B in contrast to Area A, forms a thematic gradient to the Eastern side of Eastleigh as a district. In this area, the closely knit urban form in A dwindles away, but to an abrupt stop. To facilitate easy comparison, Area B has been analysed under the same sub-headings as Area A.

PLOT SIZE

Plots in this area are bigger (20 x 44 m). As a result they produce a slightly larger grain to the street facade but nevertheless they represent a small grain relative to the length of the street. In some instances plots have been amalgamated producing large units in

respect to the street. At most only plots of one block have been amalgamated.

ARCHITECTURE

This area is a much more recent development than Area A. The plot ratio as it developed has been higher and consequently the majority of the buildings are two stories. The general plan form is court yard type. The original intention was that each floor could be occupied by a different family while the court yard could be communally used. The cultural forces underlying the evolution of the built form therefore are the same as in Area B.

The distribution of built up space on two levels the floor area for each floor. Consequently the buildings do not always form a continuous facade. The gaps nevertheless are not large enough as to undermine the varied continuity of the street facade. In fact in some instances these gaps form part of the rhythm of the facade.

In the few instances where plots have been amalgamated, the consequent developments in housing have not been in sympathy with the predominant courtyard houses or the general articulation of the street space. This is because the agents behind developments, institutions like Kenya Railways are alien to the social cultural forces which have hitherto been behind development of most of Eastleigh. These developments represent negative contribution to the urban form. Where the amalgamated plots have on the other

hand been developed for an institution, say church, the resulting urban form has enhanced the street scape. This is the case with St. Teresa church where Juja Road meets 1st Avenue and represents a positive contribution to the urban form.

TOWN PLANNING BYE-LAW AND URBAN STRUCTURE

The town planning bye-laws have influenced growth and resulting built form more or less as in Area A. Although the structure is orthogonol as in Area A, the size of the blocks and their orientation produce a marked difference to the built form and the streets so defined. Although each block can be visually grasped in one go the streets are less articulate especially if compared to Area A. Lack of tarmac on the majority of the streets and the fact that quite a substantial number of plots have not been developed explains the general inarticulate nature of the streets. A few blocks, those fronting Juja road and General Waruingi street have been laid such that their length fronts the street. This is in contradiction with the general orientation of the blocks but fortunate to the street in that the buildings on these blocks have their width along the street.

The essential character of the built form is brought out within the following photographic survey and commentary.

AREA B



1

Typical two level houses in Area B. Note the gaps between the buildings do not undermine the interest on the facade. The balconies which are a characteristic feature add interest to the facade. One notes the absence of decorations on the parapets. Economic considerations, which are not always compatible with architectural quality were crucial in evolution of these houses. Built in late '50s, the modern movement had also caught on.



2

Typical untarmacked roads in Area B. This road reserve (you cannot really call it a road) acts as the road, the open play space for children, and as a parking space for cars and tankers. Compare 1 and 2. Tarmacking makes a lot of difference. Parts of such streets can be left as open play spaces while allowing for partial vehicular accessibility, much as has been proposed in Proposal for Improvement in Communication Pattern.



3

A development on one block where all the plots have been amalgamated into one. The resultant built form is alien to Eastleigh. Different styles of built form add vitality to the urban environment, but to do this they must add to and not detract from

definition of the street space. The comprehensive development in 3 represents a break to the street facade.



Typical street scene along General Waruingi Street. Once again the oil tanker represents a prominent feature.

4



Another scene along General Waruingi Street. Where wide road reserves have been provided kiosks form a prominent feature.

5



All blocks along Maribi Streets have been comprehensively developed. Note in this case the maisonettes front and define the street. This is a case where comprehensive developments have respected the street.

6



This block of flats represents new direction in housing. This particular block respects both streets that it fronts. Low rise high density perimeter housing has been established especially in Britain as a better alternative to high rise

7



8



9

housing. Such an alternative could have captured the obviously unutilized open space. The continuity of the street facade could also have been guaranteed.

AREA C

This area is composed of social facilities. The fact that in city maps the area behind the market is designated Stewart Square indicates that this area was intended to be the urban heart of Eastleigh. The main activities in this area are schools, market, bus depot, a church and a social hall. The design of individual facilities appears unco-ordinated and any co-incidental co-ordination is avoided by fencing off each one of these facilities and the activities therein. Below is a short description of each facility in this area.

CHURCH

This is a very humble building; its strength is its associational qualities, that is, its spiritual meaning as opposed to its mass effect.

BUS DEPOT

The garage is very industrial in character. Apart from the functions it embodies its architecture is in complete contradiction with more civic architecture expected in

an area designated as a 'public square'.

MARKET

By any standard the market is a shanty. Better provision of the market activities as indicated earlier is urgently called for.

SOCIAL HALL.

The social hall as a building is quite reasonable and a series of activities like nursery school, films, social and political meetings, do in fact take place here. No one can pretend that this hall, the major one in Eastleigh embodies enough activities nor are the activities provided in terms of space well catered for. If a comprehensive programme for a social hall is drawn out, it will inevitably be calling for a much bigger building.

In conclusion, the potential of integrating the various buildings into one or a series of compositional forms exists through a sensitive use of Stewart Square. Then, in terms of its definition and the role it would play to the built form around it, Stewart Square would be the civic heart of Eastleigh. The schools around Stewart Square can only be integrated to the square with difficulties. An attempt should be made however to integrate them by arranging their access to be from the square. In this way they would retain their individual precincts and at the same time relate to the square.

MARKET



1

A panoramic view of the market. The market is a conglomeration of individually constructed stalls. This is clearly evident from the overall form.



2

One of the entrances to the market. Note the assortment of construction materials.



3

Typical interior scene. Note the inadequate width of the walkway. In an effort to protect the display area from rain the walkways have been covered. The resultant market interior is very dark.



4

An open storm water drain along one of the interior walkways. Not all internal walkways have this provision without which the stalls risk flooding during rainy days. The hard surface on the walkway is a big advantage.



5

Typical display of merchandise. Sellers use raised platforms and walkway for display. Display along walkways inhibits the flow of customers.



6



7

Another entrance to the market. Timber and old pieces of G.C.I. dominate in construction materials. The fire risk in this type of markets abounds. Within my recollection such a market was gutted down by fire elsewhere in the city.



8

The market forms an important commercial node. Selling and buying continue even on the pavement. The hand drawn push cart represents a standard mobile market stall.



9

Filth at the market entrance. The location of the cleansing facilities right in front of the market entrance is inappropriate. The storage facilities for rubbish is inadequate especially given the inefficient nature of city council's cleansing department.



10

To confirm the inefficiency of city council's cleansing department this photograph was taken on a different day from number 9. Note the pick up on the pavement. Here is clear evidence of lack of sufficient servicing facilities.



Sell anything to scratch a living! is the motto. Kids sell packets of groundnuts near the market.

11

SOCIAL HALL



Part view of social hall from the road. Note signboard advertising social events scheduled.

1



Full view of the social hall. In the main it is a humble building, but the activities it embodies are of great significance to the community.

2



General view of the social hall grounds which incorporate most of Stewart Square. Note the market and the bus depot in the background.

3



Back view of the social hall. The tree shade provides good resting ground for the jobless and layabouts.

4



Another view of the social hall grounds.

5

BUS DEPOT



1

Bus depot from General Waruingi Street. Note the industrial character of the main shed.



2

View inside the bus depot. To the left is the main shed of the depot. Buses are stored here when not in use. To the left is a repair shed.



3

1st Avenue provides for access and exit from the depot. The bus depot is a cause of serious traffic congestion.

SCHOOLS



1

View of a primary school taken from social hall grounds (Stewart Square). Like everything else around Stewart Square it is fenced off. Another entrance from Stewart Square should be provided. This would greatly enhance Stewart Square as a public urban space.



2

Eastleigh High School. A view of its grounds. Its entrance is from Gen. Waruingi Street. As argued above another entrance from Stewart

Square should be provided.

CHRUCH



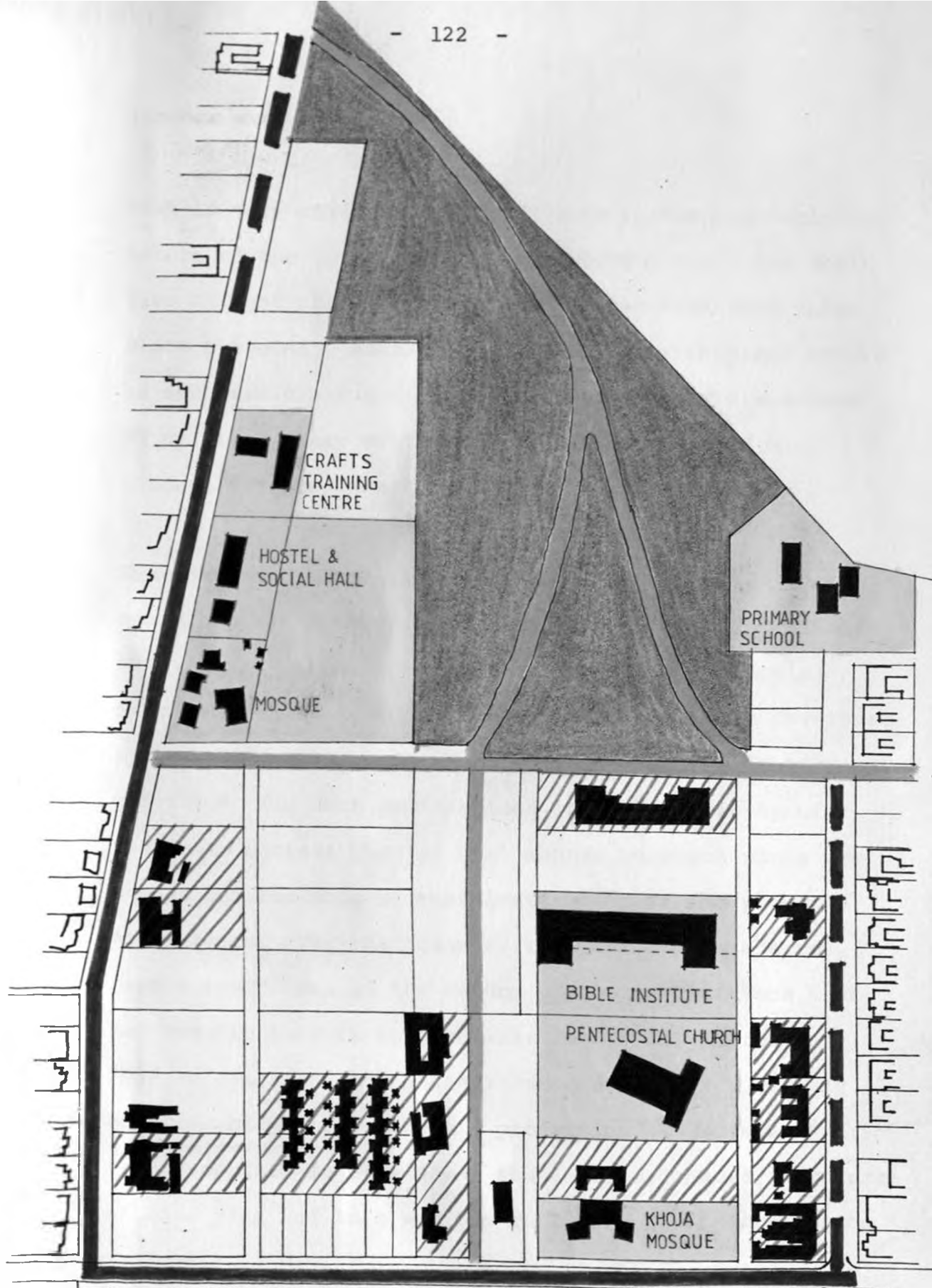
3

View of the church from General Waruingi Street. The siting of the church is fortunate in the sense that it relates to the street.

Through accident or design the church forms a visual climax to one of the minor streets (see Fig 8).

AREA D

This area is characterised by comparatively large plots ranging from 30 x 40, to 30 x 100, to 60 x 100 metres. Given a constant plot ratio and coverage the investor has at his command the evolution of built form of a much bigger scale than say Area A and B. What happens to the built form is solely dependent on how sensitive to the urban environment the architect is. This is mainly because the large size of the plot automatically removes the constraints to development as evident on smaller plots. As it has transpired the majority of the emergent built form are set pieces, i.e. figural in character. This is not always a negative quality especially for built forms whose quality is the associated meaning like churches and mosques. Other than mosques and a church we have a comprehensive development of maisonettes, blocks of flats, youth hostel, and a community centre. For commercial reasons, one plot along 2nd Avenue has been



EASTLEIGH

AREA D Fig 9

KEY

- | | | | |
|--|---------------------|---|------------------|
|  | PEDESTRIAN MOVEMENT |  | INSTITUTIONS |
|  | TARMACED ROAD |  | RESIDENTIAL |
|  | UNTARMACED ROAD |  | OPEN GREEN SPACE |



further subdivided.

What is very curious about this area is the unco-ordinated nature of the access systems for these plots. One would have thought that common sense dictates that such large plots supposedly earmarked for public institutions should be accorded clear access systems of generous dimensions. To my dismay many of these plots can be reached only through service lanes.

The fact that this area has continuously been cut out in sub-plots and dished out to institutions bears me witness that it was originally intended to provide for social services through public and private institutions developed there. Whereas I cannot find reason to contest the provision for such institutions, I do find plenty of reason to contest the 'ad hoc' manner in which plots are mapped out for this or that institution if and when the need arises. For the planner, it must be possible to have a rough idea of the nature of the institutions that may require land in an area like Eastleigh. Based on this information, the planner can provide for a variety of sizes of plots as per his projection of different requirements. In this way a stable co-ordinated structure of land plan and in a way the resulting built form can be evolved.

As it has happened in other areas in the city, the risk of not subdividing and designating use of land is that

corrupt officials in the city council have taken it upon themselves to allocate themselves, councillors and friends land meant for public utility. The residential development near city park Nairobi is a case in point.

Open communal space is conspicuously lacking in Eastleigh. The only spaces which can provide for this is either area C or D. In all fairness I would strongly propose that these two areas be provided for with communal open space more or less like squares in the heart of cities. Area D has the potential of a more informal one.



1

This is one of the standard primary school buildings to be found every where in the city. This particular site was not intended for a primary school but when the need arose it could be accommodated there.



2

View of vacant area from the primary school. This area is used for illegal cultivation. In my opinion it should be landscaped to form a park.



3

A well trodden path. This path connects Mathare Valley with Eastleigh shopping area.



4

Housing development by a rural co-operative group. Eastleigh has been one area where rural co-operative groups have invested heavily. This building which is not dissimilar to newer buildings discussed elsewhere indicates new trends in property ownership and architecture in Eastleigh.



5

Another relatively new building.



6

Goats eating grass by the roadside. This is a testimony of the transitional nature of our urban population. Not fully urban and not fully rural. Plenty of open space in this area allows for this transition.



7

This church is on two amalgamated plots. Like all churches it is set in its own compound.



8



Yet another mosque. With most of the adjacent plots not developed it forms a prominent landmark.

9



10

11



A hostel and another social hall. The social hall has been developed by a private institution.

12



A women's crafts centre along 2nd Street.

13

2ND AVENUE

2nd Avenue was the first major street to be developed in Eastleigh. Its essential character is born out of the following factors.

1. MIX IN USE OF BUILDINGS

Almost all the buildings fronting this street are mixed in use. In one floor buildings, the front rooms are used for shops while the rooms at the back are used as residential accommodation. Upper floors in 2-floor buildings are used as residential accommodation while the ground floor is used both for residential and shopping purposes. The result of mix in use of buildings along 2nd Avenue is a very vibrant atmosphere to the street space.

2. WIDTH OF THE STREET

For a main commercial street 2nd Avenue is very narrow. As the photographic survey indicates provision for parking is lacking. Congestion, however, is not on the road but on the pavements which are used by pedestrians and cars. In some instances commercial activities spread to the pavement.

3. LENGTH OF BLOCKS FRONTING THE STREET

2nd Avenue is characterised by very short blocks. Jane Jacobs advocates for short blocks. Her argument is that long blocks produce dismally long strips of monotony and

MADYAN (AREA)



EASTLEIGH
2nd AVENUE

Fig.10

SCALE 1: 10000

KEY

darkness - the great blight of dullness! To many extents her arguments that long blocks isolate residents, users and the capacity for mix in use of the built form are valid. There must be, however, an optimum size of a block which satisfies both functional and visual requirements of residents and users. It is my contention that the lengths of the blocks along 2nd Avenue are so small that one; they undermine articulation and therefore visual and existential capacity of the street space. Two, lack of continuously long enough street frontage undermines the possibility of like business concerns establishing their specific zone, i.e. the economic advantages of concentration are excluded. Three, frequent street crossings interrupts the natural progression of the shoppers too. The joys of shopping on streets like Bazaar in Nairobi, Oxford Street in London, or Kalva Strass in Amsterdam where clothes shops for instance are in one zone and the interruption of shoppers is minimal are not there.

4. DIMENSION OF PLOTS FRONTING THE STREET

As Fig 3 indicates all plots fronting 2nd Avenue, except those along Area D have their length along the street. There are a few disadvantages to this.

- a) The street frontage which is prime as shopping frontage has been shared by fewer individuals. I feel that the economic advantages along a main shopping street should be shared by as many as

possible. Were the width of the plot along the street, the street could have accommodated more plots, i.e. more owners.

- b) As discussed earlier, with the width along the street, the elementary grain is smaller, the variety of the built form is therefore larger. Increased variety of the built form adds to the interest of the facade.

Below is a photographic survey of 2nd Avenue which attempts at bringing into sharp focus the points discussed above.



1

Scene along 2nd Avenue. The one floor structures represent the older buildings which are very similar to those along East-West streets as discussed under 'Area A'.



2

To the right is one of the older 2 storey buildings. Note the high parapet walls and the decoration thereon. The architecture is essentially the same as in the older one level buildings.



3

New directions of architecture along the 2nd avenue. Note the details on the facade are different. Natural stone finish seems to be in fashion. With the indigenous people lacking an urban culture, the style can only be derived from the fashion of the day. The court yard plan form nevertheless seems to withstand the test of time.



4

Note the length of the facade - a product of the plot dimensions. This particular plot is not monotonous on account of parapet details. But if compared to the street facade

in photo 1 Area B the variety that a smaller grain would have produced automatically emerges.



5

Note the visual and functional interruptions of street activities and facade by the street crossing. This as stated earlier occurs at an undesirable frequency.



6

Continuity of the facade is not only interrupted by street crossing, but undeveloped plots (see right of photo) are also contributory.



7

Typical scene along 2nd Avenue. Note the width of the street does not allow for parking. Consequently, cars compete for pavements with pedestrians.



9

Note the poor state of repair of the pavement due to cars parking. Trouble is, repairs take a long time to be effected. Where bollards have been erected the pavement does not wear out as fast.



Service lanes form minor interruptions to the street. As testimony that they are urban dead spaces, note their use as rubbish dumps.

10



Furniture shop extends to the street. Note how congested the street pavements become. The electricity poles give character to the street.

11



Tea kiosk along the street, leave a vacant plot and along it we shall build a kiosk. Tea kiosks are not common along 2nd avenue.

12



Shoe makers, tailors use the pavements - especially in front of non-operational shops.

13



Islamic studies centre incorporating prayer facilities. Typical mosques, it is entered direct from the street, and what is more it respects the scale of buildings fronting the street. Note the canopy along part of the building which incorporates shops. The centre forms an important landmark on account of its associational qualities as opposed to its size.

14



15

Corner of the street preaching as seen above has hitherto been a very uncommon phenomena. Naturally the location of this centre influences the location of this activity.



16

Open cafe near the centre. Note elderly men relax at the cafe while waiting for prayers - a five times daily ritual. Location of mosques and such centres along the street usually forms a very active node. A number of businesses flourish on account of the crowd generated. Similar locations of such institutions elsewhere are to be encouraged.



17

View of Khoja mosque. Set in its own compound this mosque is a very visible building. It is also an important node and landmark.



18

Typical facade details. These details are very similar to those discussed under Area A. Only 2nd Avenue has to receive special attention because being a main commercial street, it is peculiar in character.



19



20

1ST AVENUE

1st Avenue was the second major street to develop after 2nd Avenue. Its essential character is born out of the following factors.

1. WIDTH OF THE ROAD

In contrast to 2nd Avenue, 1st Avenue is provided with a wide road with tree lined road reserve much like a boulevard. The wide road reserves have attracted a big number of informal kiosks which are concentrated near the market and the church. A few are scattered along the two sides of the street. These informal kiosks have transformed 1st Avenue into a commercial street although an informal one. When 1st Avenue becomes a fully fledged commercial street (eastern side of 1st street has been earmarked for change of use from residential to commercial use), it will be able to contain pedestrians, car parking and vehicular movements more comfortably than 2nd Avenue.

2. DIMENSION OF BLOCKS AND PLOTS FACING THE STREET

To the West of 1st avenue, the blocks are larger. The street crossings are therefore fewer. Plots on blocks other than those comprehensively developed and those in Area C have their width facing the street, see Fig 8. This is a better arrangement for blocks and plots facing the street. To the East of 1st Avenue the situation is much the same as 2nd Avenue. The above commentary should be seen in the light of the analysis of 2nd Avenue (also see Fig 11).

1ST AVENUE



1

Note a tree lined side walk. Trees help to brake the scale of the street space. To the right is a kiosk lined East of 1st Avenue. The concentration of kiosks near the market is due to the concentration of people the market provides.



2

Typical tea kiosks. The council has standardized construction materials and floor finish. This has produced a very improved appearance. The council discovered that they can never succeed in demolishing these illegal structures. A standardized construction was a last option. In locating the kiosk near the plot boundary wall the owner saves a wall. The side walk is not intefered with too.



3

Photos 2 and 3 show the problem of dumping rubbish by the side walk caused by kiosks. This is a health hazard and must be contained.



Cars park along the road near a crowded bus stop near the market. The market as has been suggested earlier needs a car park.

4



The church (cannot be seen but it is to the right) and the school therein also encourage the kiosks but not as many as those near the market.

5



The church forms a very prominent landmark along 1st Avenue. This is on account of its size and associational qualities. This view is taken from Gangeo Street. It forms the climax of Gangeo Street and closes its vista.

6



View of the church along 1st Avenue. Note kiosks in the foreground.

7



Buses waiting for their schedules at the junction of 3rd Street and 1st Avenue. Note the attendant congestion.

8

EDGES OF DEFINITION

The distinct identity of Eastleigh in imageability terms is born out of the nature of its edges of definition. Below is a brief description of the main edges of its definition. The descriptions are supplemented by photographs. It was not possible to take photographs of Eastleigh boundary with the airforce base as this is an area designated 'protected area no photographs allowed'.

JUJA ROAD

The strength of Juja road as an edge is born out of its lateral nature which acts as a sharp gradient between the more formal Eastleigh and the more informal Mathare Valley.



1A

In photo 1 note the difference between Mathare Valley to the left and Eastleigh to the right.



1B

Metal windows frames on display. An example of light industrial activities along Eastleigh side of Juja road.



2

New shops along Juja Road.



3



4A



4B

These two very interesting facades belong to some of the oldest buildings in Eastleigh. Their peculiar character is nevertheless born out of the treatment of their parapets.

MURATINA

Muratina is also a strong edge because it marks a sharp gradient between Eastleigh and the area to the West which is not developed.



5

Note the abrupt way in which Eastleigh ends (right of photo also part of Area B). Poles and the electric cables give a vertical emphasis to the edge.



6

Photo looking South of Muratina Street. To the left of the photo is the boundary hedge of Eastleigh Secondary School. This also helps define Eastleigh.

MARIBI STREET

This is a clear lateral edge but not as strong in imageability terms as the two discussed above. This is because part of Eastleigh along this edge is similar to Pumwani to the South.



7A



7B

Note the two blocks of flats to the north of Maribi Street in Eastleigh are similar to those on the southern side of Maribi Street in Pumwani. As photo 7A above and 6 in Area B indicate part of Eastleigh side of Maribi Street has a maisonettes development and therefore contrasts with Pumwani.

CHAPTER IV

CONCLUSIONS TO CASE STUDIES

FUNCTIONAL ZONING.

From the two case studies, it is possible to conclude that the strict and clinical separation of activities is not necessary. In fact mix in function is the more natural way of growth and has a lot to its merit. While retaining a degree of mix it was also observed that like activities tend to congregate around the same zone. This suggests that while for certain advantages, certain activities should congregate at the same area, it is not necessary that they occur alone. For instance, although light industries in both Westlands and Eastleigh occur along certain streets, along the same streets are residential accommodations, shops and offices.

In general therefore, there are activities like hospitals which are so specialized that they require their own siting. On the other hand, there are other activities like shopping, residence and offices which although may require precinct in which they are predominant activities, can at the same time co-exist with other activities. Below is a short description of zoning criteria of the main activities as concluded from the case studies.

Residence.

Residence constitutes the bulk of the functions of the two cases studied. In fact the two cases studied developed as residential areas in the main. Residential accommodation does not require very prominent location compared for instance to shops. A location behind the main street has the advantage that a mixture of activities is achieved by gradual conversion of some houses into shops. This has been the case in both Eastleigh and Westlands.

Shops and Offices.

These occur in multi-use buildings along the main streets. In the design of a district centre this fact should be recognised. As far as possible they should be concentrated along one street, the main street. The proposal for improvement of vehicular and pedestrian circulation in Westlands indicates that it is important that the main street should be pedestrianized. This allows for a high degree of articulation of street space. On the other hand, the proposals for improvements of movement pattern in Eastleigh suggest the possibilities of pedestrians and cars co-existing. This can be achieved through careful design.

Market.

Contrary to the location of the markets in both Eastleigh and Westlands, a market should be seen as a very central activity. In our short urban history, markets have

constituted the essence of many rural townships. Given their significance as retail outlets, markets should be very centrally located. Markets should be seen as very predominant commercial activities and not a mere social facility. Like in many towns in Kenya, the market should constitute a nucleus of growth.

Institutions of Worship.

These should be located along the main street on account of the large crowd they generate. This adds life to the street at times and on days when shops and offices are closed. The impact of locating churches and mosques along the main streets in Eastleigh is very evident. Mosques are busy in the evenings while churches generate a big crowd on Sundays. Churches and mosques are large masses. Their location along the main street allows them to play a prominent role in the drama of the street scape.

Light Industries.

Light industries should be located in their own precinct at the periphery of the centre. It is plausible that they can be accommodated in multi-use buildings. They demand a high level of vehicular accessibility. Their location close to the market takes the advantage of the large crowd the market generates.

Hotels and Restaurants.

Hotels and restaurants should be seen as an integral part of the commercial life of an urban centre. They should therefore be highly integrated. Where possible their

location should take advantage of the topography.

Transit Point.

Transit points should be designed to minimise transfer distance between different communication means. The commercial significance of the crowd generated by the transit points should be taken advantage of in locating commercial activities like shops and markets. The transit point should compliment the market in its role as the nucleus of growth of an urban centre.

MOVEMENT PATTERN, STRUCTURE AND PARKING

1. VEHICULAR AND PEDESTRIAN MOVEMENTS

The only vehicle that needs to get right to the shop is the service vehicle. Most people do their business in the centre on foot once they are there. It is therefore imperative that pedestrian movement should be a prime consideration. It should be possible at the same time to bring individuals in cars as close as possible to places where they want to do business. That is, pedestrian movement will have to compromise the need for vehicular access within the centre. The proposed improvement of movement pattern in Westlands demonstrates the possibility of a pedestrian main shopping street while at the same time allowing for a reasonable vehicular accessibility within the centre.

2. ROAD HIERARCHY

In the cases studied the problem has been one of hierarchy. The proposed improvement of movement pattern in Westlands demonstrates the advantages of a clearly established hierarchy especially in dealing with congestion. In the case of Eastleigh my proposal for improvement demonstrates that the hierarchy established can be maintained even as the centre grows, only the same roads assume a different role. In both pedestrian and vehicular movement hierarchy can be achieved by different levels of complexity in the movement.

3. ROAD PATTERN AND URBAN STRUCTURE

In the two cases studied road pattern has been the main structuring element. That is, the resultant urban form and urban spaces have a direct result of the road pattern. In my view, the road pattern should be geared to serve the desired urban spaces and form. In other words, the road pattern should be the servant and not the master of the urban structure.

4. PARKING

As Eastleigh case study indicates, it is not necessary to bring cars inside the plots. The car ownership in the proposed centre like Eastleigh is so low that communal parking is a valid proposition. Large car parks should, nevertheless, be avoided. They detract from the continuity of the urban fabric and leave large barren urban spaces when not in use.

BUILT FORM AND TOWNSCAPE

From the two cases studied, there are four categories of built form which should influence the design of a new urban centre.

1. SMALL UNITS.

As the Eastleigh case study indicates, small units of built form along the street facade have the potential of joining the street facade such that "the buildings appear as surfaces rather than masses". This of course presupposes a certain density and a certain architectural style. The important thing here is that the street space assumes the primary importance, i.e. 'it is figural'. The built form on the other hand assumes the subservient role of defining and articulating the dominant street space. This is not to say that gaps cannot exist along the facade. If they must, they should be of such a proportion that they form part of the composite rhythm of the street facade. Photo 1 of area B Eastleigh and Photo 5 along Woodvale Grove are good cases in point. It is important that the elementary grain of the street facade be manifestly exhibited. This is possible by providing for evolution of minor variations in physical expression of one building from the other. This in turn will add interest to the street facade.

In Eastleigh the physical manifestation of the elementary grain and therefore interest of the facade has been achieved by allowing the majority of the plots to be individually developed. In this way, the strong urban

cultural tradition of the residents has been allowed full expression. For a city which is hardly 80 years, and where the population is still in a state of transition from traditional culture to an urban culture, one cannot expect a strong urban cultural tradition. The least an urban designer in our context can do is to try and accommodate the development of an urban culture which will gradually influence both the plan form and the physical architectural manifestation of the built form. The development of an urban culture in the context of the proposed centre will be a synthesis between indigenous tradition, for instance the centrality of the market place, western tradition as exemplified by Westlands, and from India as exemplified by Eastleigh. As examples of other urban centres for the low income population indicate, the social economic forces behind the evolution of the proposed centre are likely to be closer to those behind evolution of Eastleigh. We must therefore take our cue much more from Eastleigh especially as far as autonomous development on small plots go.

2. FIGURAL BUILDINGS.

These are buildings which when along the street detract from the quality of the street space and thereby subordinate the street space to their quality as set pieces. Christian Norberg Schultz in *Existence Space and Architecture* presents an argument against them. I disagree with the blanket statement that figural buildings always detract from the street existential space. St. Teresa

in Eastleigh for instance adds to the quality of the street space on account of its landmark and nodal qualities. Gordon Cullen in 'Townscape' amply demonstrates that churches, town halls and markets, especially in old English towns greatly enhance the existential street space. In some instances in fact, they are the essence of the street space at the points where they occur.

3. COMPOSITIONAL FORMS.

As compositional form is a number of buildings whose quality as set pieces although clearly manifest are so disposed to each other that they form a whole, a composition, their quality as set pieces become subordinate to their role in the composition. A compositional form need not constitute only buildings which are physically linked, but should they be apart, they should be so disposed that the apparent magnetism to each other closes the gaps and thereby produces a static but tensional space between them. The Campidoglio in Rome, the capital in Chandigarh by Corbusier, and the capital in Brasilia are good examples. Compositional forms need not be composed of civic or monumental buildings only. Barbican Centre, London, a centre which is both residential and commercial is a compositional form. The Economist group of buildings, Piccadilly Circus London is a composition of coordinated office buildings. The examples above indicate that the compositional form concept lends itself applicable to among other situations to the design of the civic group of the proposed centre.

4. PRECINTUAL FORMS.

Precintual form is a situation whereby the essence of an urban space is the buildings enclosed. The essence of St. Paul London's precinct is St. Paul Cathedral. Kangang Market in Kiambu - Kenya, for instance, is in the middle of a shopping square whose essence is the market.

Originally, Kangangi Market was an open air temporary market but now it is all covered and permanent. Precinctual form is an important concept and has been used in history to incorporate important social institutions to the commercial life of the city. I believe it is an important concept and should be advantageously used to avoid the clinical separation of functions within the city.

STRUCTURE

The influence of the structure in the resulting urban form and spaces is very crucial. In Eastleigh for instance the difference between the orthogonal structures to the East and West of 1st AVenue help to articulate the street space of the small East-West streets by closing their vistas to the East. In Westlands, the diagonal (Ring Road) which has been superimposed on the orthogonal structure provides for a circumstantial variation to the general orthogonal structure. In the process Woodvale Grove, for instance, has a dynamic enclosure to its vista to the East. Louis Kahn's statement 'that a building is what it wants to be', equally applies to an urban centre. 'An urban centre is what it wants to be', that is a synthesis between what its users want and technology. In essence therefore the structure must derive from the urban environment the

users want to have. The urban designer can at best try to interpret the users' desires. The following elements which influence the urban environment must be considered in arriving at the structure.

1. MOVEMENT.

In the two cases studied, vehicular movement forms the essence of the structure. In my opinion, whilst both pedestrian and vehicular movement patterns will inevitably influence the structure, pedestrian movement should be the dominant influence. This is because the majority of activities in the urban centre are conducted on foot even when individuals get there by car.

2. STREET GEOMETRY.

The linear street is the most popular street geometry especially where the sole purpose of the structure is a land plan. This is true for the two cases studied. The street need not be linear. 'In the towns of the past for instance oblique angles and curved lines used to create closed perspectives enlivening the prospect'. The real need for vehicular transportation in modern towns does not always work against the stated possibility. Where the case justifies, we must borrow from history, which in some instances presents eternal solutions to the street geometry. We cannot afford to be eclectic in our borrowing. Any borrowing must be synthesised with the present requirements of our street space and technology.

3. STREET DIMENSIONS.

The width of the street must relate to the activities intended. In Eastleigh for instance, 2nd Avenue is very congested. If vehicular movement was excluded, this would not be so. The width and the height influence the quality of the street space. The street space therefore should not only be mechanistically determined by angles of light, building lines etc., but should also be influenced by the purely subjective aspects of the street space.

4. STREET BLOCKS.

The concept of street blocks is important especially in orthogonal plans. The Eastleigh case study puts into sharp focus the fact that there is an optimum size of the street block which satisfies both the pure functional requirements of the street commerce, and the pure sensory or existential requirement of the street user. It is the duty of the urban designer to arrive at the optimum size of the street block for each situation.

5. PLOT DIMENSION.

In the final analysis the structure must get to the plot dimensions. As argued earlier, a main shopping street must be shared by as many as possible. Beside the economic benefits of small subdivisions, there are aesthetic advantages as argued earlier. To achieve small subdivisions of the street block, it is only logical that the plot width faces the street. There are possibilities of plots being amalgamated and developed for institutions, or bigger commercial buildings. These are exceptional

cases rather than the rule. Nevertheless, it will be of some value to anticipate the need of larger plots for development of some large institutions along main shopping streets. In Eastleigh, St. Teresa Church, the market and the social hall are good examples of such possibility. It is important to link the allocation of such a plot with a study of the resulting masses.

6. IMAGEABILITY.

Eastleigh has an easy structure to comprehend and well defined edges. It nevertheless lacks a hierarchical organization of well disposed paths, nodes and landmarks without which any urban centre becomes formless in imageability terms. Westlands on the other hand, lacks a clear system of paths. Its edges of definition are weak because they do not constitute a character gradient. It is therefore difficult to comprehend the structure and the limits of Westlands. The proposed improvement to movement pattern attempts at creating definite edges, imposing a hierarchy of paths, and introducing nodes along the main pedestrian path. This improves the imageability of Westlands and allows for easier orientation for the user.

Imageability as espoused by Kevin Lynch has become an important consideration in urban design. This is more so in large metropolitan centres where the sheer size of the centre imposes a great need for orientation. For smaller urban centres, whose size in any case can be

visually grasped at one go, the problem of orientation is not as great. Of greater importance in such a situation is the concretization of users' existential space and therefore existential image. This can be achieved by the quality of paths and nodes. Should there be need for a few reference points, they should satisfy both the internal need for focus and the external need for detailed orientation. Undoubtedly, reference points externally visible will greatly aid the concretization of the overall external image.

CHAPTER V

DESIGN OF KAYOLE DISTRICT CENTRE

BRIEF.

According to the city council planning guidelines, a district centre within the city region is defined as a group of shops other than the CBD, Nairobi that by virtue of characteristics discussed below serves consumers other than those of its immediate catchment area in providing goods and services that would otherwise be sought in the CBD.

To achieve this level of service it is a precondition that the centre also provides normal, local goods and services to a sufficiently large catchment area in order that it may reach a certain take off point.

For a district centre to be successful it must fulfil the following locational circumstances.

1. Its chances of success are high if it is the only major shopping centre in the area.
2. It is on a bus route.
3. It is located in a densely populated area.
4. It is in the proximity of a major employment area.

The site selected fulfils all these locational requirements.

The basic elements of a district centre viewed in broad terms consist of:-

1. Administration
2. Communication linkages
3. Commerce sustained by the catchment
4. Social services
5. Local industries.

ADMINISTRATION.

Local Government.

The local government administration will be incorporated in a town hall and will include the following departments with their functions as enumerated..

1. Housing and Social Services
 - 1.1 Housing Management
 - 1.2 Housing Maintenance
 - 1.3 Social Services, cultural activities celebrations vocational training etc.
2. Treasury.
 - 2.1 Collection of revenue, which will include house rent, water bills, rates, special taxes, sewage taxes, licences, etc.
 - 2.2 Accounting and treasury administration.
3. Engineers department.
 - 3.1 Traffic - Maintenance and management, parking etc.
 - 3.2 Electrical - street lighting and maintenance.
 - 3.3 Park section - maintenance and development.
 - 3.4 Planning - Area planning officer with staff.
 - 3.3 Architect - Area Architect with staff.
 - 3.6 Water Sector - Maintenance and development.
 - 3.7 Roads - maintenance and development.

3.8 Sewage Section - Maintenance and development

3.9 Surveyors Section

4. Health Department.

4.1 Public health inspectorate

4.2 Cleansing section - area cleansing administration with a cleansing depot in adjoining industrial area.

4.3 Nursery school.

4.4 Overall co-ordination of health services in the area

5. Education Department

5.1 Co-ordination of education facilities in primary and secondary schools.

5.2 Provides for inspectorate, staff recruitment, schools development etc. Headed by an area Education Officer.

6. Town Clerks Department

6.1 Legal Section - litigation for minor offences, traffic, hawking etc.

This section may include some courtrooms to be presided over by District Magistrates.

6.2 General Administration

7. Councillors' Chamber.

It may be necessary that the town hall accommodates office space more than required. This can be let to private individuals. In this way the City Council will be supporting the move to decentralize office accommodation from the City Centre.

The town hall should be about 8400 m² in area.

Central Government.

1. The following ministries should be provided with branch offices to serve both the local need and to provide for additional accommodation to those ministries which need not be in the city centre and suffer from congested office accommodation. These ministries are; water development, industry, commerce, land, labour, health, transport and communication, housing and urban development, culture and social services.

2. D.O.'S Offices.

These will cater for revenue collection for government land, licences, arbitration, co-ordination of security, citizens' welfare, area political administration. DOs' offices fall under the office of the president which is also a ministry. As such it is plausible to accommodate them together with other government offices. Two sites 20 x 40m each have been set aside for government offices. These will accommodate the required area which is roughly for 4800m².

3. Law Courts.

These will be for litigation in criminal and civil cases emanating from the area. The total area requirement is 5600m² including basements.

4. Police Headquarters.

These headquarters other than co-ordinate police services in the whole of Eastern area will serve as a full

police station, the major one in the Eastern area. Other police stations or substations should be distributed at 50,000 - 100,00 population intervals across the catchment population. The idea of providing housing within the police station is outdated and forces police stations to take an unusual amount of urban space. I propose that there be no housing within the police station. A plot 3000m² should be provided. This will accommodate offices, cells, a canteen and parking.

COMMUNICATION.

The following facilities will need to be provided to ensure an efficient communication system.

Post Office.

It is recommended that two post offices be provided. One should be a major post office and the other a minor post office with post office box arrangements and telephone kiosks. In the minor post office, a telephone exchange should be incorporated. Each post office should be about 2400m².

Bus Terminus.

To form an effective link to other parts of the city, other towns, e.g. Ruiru, Thika, Kiambu, etc. and the upcountry, a bus terminus is a realistic idea. The bus terminus should incorporate stands for 20-30 matatus, 50 municipal buses, and 50 country buses. An area of about 10,000m² (1 hectare) should be set aside.

Railway Station.

As argued in the first chapter of the thesis, a railway station is a realistic idea. It should consist of a covered platform of about $100 \times 40\text{m}^2$ and a space of about 200m^2 for booking offices and a canteen. It should be possible to expand the platform with an increase of commuters.

Petrol Stations.

In the first instance two petrol stations should be provided. Additional to the first two should depend on the level of demand. Each petrol station should be about 200m^2 .

Parking.

The general demand for parking is not anticipated to be high since most people within the catchment population are not car owners. It is unlikely that this situation will change in the near future. The total parking required has been worked out on the basis of the general amount of parking demanded by various functions. This works out to be 3000 parking spaces or about 7.5 hectares. The figure provided is an overprovision but well caters for marginal increases in demand. In general, parking should be provided in public open spaces as a facility by the authorities. Provision for parking by individual developers has altogether been avoided. Experience within the city centre, Nairobi, has established that it is difficult to enforce provision for parking on individual

plots. At the same time, parking on individual plots forces cars to penetrate into the city centre while peripheral location of parking should be ideal.

COMMERCE.

Shopping.

The catchment population for Kayole will be 900,000 people by 1985. In comparison, Eastleigh has a catchment population of 150,000 people. The total number of shops is about 200, that is, we have one shop for every 1200 people. Westlands has about 60 shops. Shopping is therefore provided at the rate of 1 shop for every 750 people. Kayole catchment population compares well with that of Eastleigh in terms of income level. The provision of shops should therefore be at the rate of 1 shop for every 1200 people. This works out to be a total of 1200 shopping units. This appears to be high especially when one notes that the rise in requirements for shopping units is not in direct proportion with the rise in catchment population.

Both Westlands and Eastleigh case studies have brought out the fact that at different stages in their developments residence and shopping assume different equilibriums. The equilibrium has continuously shifted in favour of shopping. Given the ever increasing demand in housing, it appears prudent that a higher proportion of housing should be provided for initially and let shopping find its own equilibrium. The figure 1200 is a very rough indicator

and may decrease with greater possible efficiency in shops.

From the cases studied the shops in the district centre are bound to be economically run if they have a majority of shops providing for non convenience goods leaving the convenience goods shops to be provided at neighbourhood level. Non convenience goods shops to convenience goods shops should be provided in the ratio of 60% to 40%. This ratio could be achieved through licensing. It should be worked out in terms of floor space rather than number of shops.

Market.

There should be two markets. One wholesale and one retail. The wholesale market should be located in the main industrial area and the retail in the district centre. Servicing by rail should be a prime consideration in locating the wholesale market. The retail market should have an open space to accommodate occasional retailers. Such an open space should be seen as a market square used say twice a week. An area of about 5000 - 6000 m² should be set aside for the retail market. This will accommodate the main hall, offices, sanitary facilities and servicing and cleansing. The open market square should be about 6000m² preferably skirted by other commercial activities.

Kiosks.

Kiosks constitute a big problem in the sense that they are located on unauthorised land but solve a big problem by providing jobs for owners and cheap eating and shopping

places for low income group. It is not possible to determine, not even without precision, how to provide for them. Suffice to say that they should be expected and catered for as far as will be possible.

Hotels.

The city council planning guidelines recommend one hotel for every 250,000 people. Westlands has one medium class hotel while Eastleigh has none. The city council planning guidelines need some interpreting especially so since a hotel is not specifically dependent on the catchment population. The location of Kayole near the airport and lack of hotel facilities in the eastern area suggests that there would be a need for hotels in Kayole District Centre. Initially two, 50-80 bedroom medium class hotels should be provided. Additional hotels could develop as a response to the demand.

Offices.

One of the basic intentions in the introduction of a district centre is to decentralize commercial office accommodation from the city centre. These type of offices will most probably be located in office buildings with other uses like shops. There will be some purpose built offices like local and central government offices, post offices etc. A majority of offices servicing Dandora Industrial Area can also be located within the district centre.

About 20% of the working group (200,000 p) within the catchment population is bound to work in offices. This works out to be about 4000 people. Every 1000 people occupy about 1045 sq.m. A total of 4180 sq. m. will therefore be required for office accommodation.

Banks.

The commercial activities in the centre and in Dandora industrial area adjacent to the centre dictate for the provision of adequate banking services in terms of numbers and variety. To cater for the cross-section of demand, it is suggested that there should be 5 banks, thus providing for a major branch of each of the main banks. The banking requirements of the low income group, which constitute the majority of the catchment population can best be served by providing for a post office savings bank in the post office.

SOCIAL FACILITIES

Library

According to city council planning guidelines a library in a centre such as Kayole should contain 10,000 volumes. On the other hand, a population of 900,000 people would require a library of about 500,000 books according to standards for developed countries. While the size recommended by city council is too small, the size derived from standards from developed countries is too large (the largest library in Kenya today, the University library has 250,000 books). Without available statistics

on provision of libraries within the city and given the dynamic nature of the urban society in its level of literacy, it is difficult to provide with any precision a library which is sufficient in terms of size. The option here is to provide for a library or library services which will accommodate an increased future demand. At the initial stages the catchment population can comfortably support a library of 80,000 volumes (twice as big as Macmillan Library in city centre, which is very crowded at the moment). Any additional library services will be accommodated by extension of the library proposed or by other libraries elsewhere within the centre. The area requirement works out to be 2500 sq.m.

Cinema.

TVs and video tapes in Kenya are largely for the rich. It is unlikely that they will replace movies in cinemas in Kenya in the near future. Cinemas in new urban centres are therefore a very tenable proposition. Initially two cinemas to sit 300 each should be provided. Each of the cinema will require about 400-500 m².

The intention in providing small cinemas is to encourage small time entrepreneurs to invest in social entertainment facilities, which in any case as it is evident in city centre is a quicker way of providing for such facilities.

Social Hall.

A social hall, it is anticipated, like many a similar halls in Nairobi will be multi-functional in use. Theatre,

public celebrations, public meetings and dances will, among other activities, take place in the social hall. As it is the case with other many such halls, some vocational training should be incorporated. Such a hall should sit 1000 people. In area it should be about 1500 sq.m.

Institutions of Prayer.

At the initial stages two institutions of prayer will be provided. This will be an attempt to cater for the two major religious groups, namely, Muslims and Christians. The mosque should incorporate prayer halls, teaching space, and open courts for moslem festivities. An area about 2000m² should be set aside. This size compares well with Khoja Mosque in Eastleigh. A church should incorporate the main church hall with all its associated smaller spaces, church offices, and a small chapel. The church should sit about 1000 people in the main hall and its total area should be in the region of 3000 sq.m.

Hospital.

One district hospital to accommodate 800 beds should be provided for. This corresponds to an approximate ratio of 1 bed for every 1000 people. The recommended ratio of 1.5 to every 1000 people is unrealistically high given the national resources and the general level of health facilities in the country. The proposed hospital will act as a referral hospital while health centres provided at neighbourhood level will cater for both outpatients and

about 20-30 beds including a high proportion, say 20 of maternity beds.

Health facilities should be considered as a national issue. It is unlikely therefore that national demand for health will mitigate for the development of the hospital at one go. Phasing is therefore inevitable. The first phase should contain some 400 beds with a beefed up outpatient and maternity wards; the second phase an additional 200 beds, and the final phase a further 200 beds to give an ultimate capacity of 800 beds. The increase in the catchment population can be catered for by upgrading health centres to sub-district hospitals as opposed to extending the hospital beyond 800 beds. In any case, the rapid development of preventive and promotive health services conducted at the health centres will, as time go by reduce the bed population ratio. A site not less than 15 hectares should be set aside for a district hospital.

Technical School.

Dandora industrial area adjacent to the centre, Kassarani and Ruaraka industrial areas within 3 km of the centre create a demand for skilled and semi-skilled workforce trained in various trades. Such workforce can best be trained in a technical institution. Nairobi in any case lacks an institution which caters particularly for skilled and middle grade technicians. A proportion of this is carried out at the Kenya Polytechnic in CBD but the polytechnic itself would prefer to cater for higher level of

personnel and become more a college of technology. There is, therefore, a real need for the development of a technical institute in Nairobi.

An institution of this type should be seen as a national institution and not an institution to serve local industries only. Based on the present polytechnic, the proposed technical school should cater for about 4000 students. A piece of land not less than 10 hectares should be set aside. This amount of land should be enough for student residence staff housing, sports facilities, instruction classes, and laboratories.

Sports Stadium.

There is a serious shortage of sports facilities within the city. This is both at neighbourhood level and at district level. The situation is worse in the Eastern Area of Nairobi where there is only one major sports stadium, City Stadium. In order to serve the local needs of its catchment population and the general needs of the city, a sports stadium should be provided within the district centre. Among the sports incorporated should be football, netball, tennis, squash, volleyball, basket ball, and athletics. Four hectares should be set aside for both indoor and outdoor sports facilities.

Fire Station.

At city scale there is an under provision of fire stations. The present two fire stations are both inadequate in themselves, and in numbers, not enough for the whole city.

It was the intention of the City Council planning department that 2 additional fire stations should have been completed by 1971 and a further 2 by 1975. The construction of 4 additional fire stations I gather is yet to begin. The 4 planned fire stations were to be located in Eastlands (East), Dagoretti Corner (West), Kabete (North-West), and Ruaraka (North-East). In view of Dandora industrial complex being well sited for further industrial growth and the location of the proposed district centre in its proximity, it is preferable that the fire station proposed for Ruaraka should be located either at Dandora industrial area or within, but at the fringe of the proposed centre.

Dandora industrial area and the proposed centre can be classified as "A risk" area due to a concentration of both industrial and commercial buildings. It is therefore recommended that there should be 3 appliances available to attend within 5 minutes, plus 2 supporting vehicles to attend within 8-20 minutes. An important locational requirement is good accessibility to major road network. Land requirement: 0.3 to 0.5 hectares to accommodate the actual station, parking and drilling. It is not necessary that the staff is accommodated in the same compound.

LOCAL INDUSTRIES.

Heavy Industries.

Heavy industries have been provided for within Dandora

industrial area adjacent to the centre. It is not within the scope of this study to establish the types and space allocation.

Light Industries.

On the basis of the case studies, a light industrial area should be provided. This area will accommodate light industrial concerns ranging from furniture, jikos, kerosine lamps, motor repair etc. Light industrial area should be seen as an important source of employment.

About 10% of the working population will be employed in this sector. In total, at least 200 units should initially be provided. They should range from 75, to 100, to 200m². A high level of vehicular accessibility is an important locational prerequisite. In all 4 hectares of land should be set aside.

DESIGN PRINCIPLES.

FUNCTIONAL ZONING

Topography, location of the railway line, location of primary roads, and the residential estate around the centre have played a predominant role in zoning of various functions in general. Below is a short description of more specific reasons behind zoning of various activities.

Commerce.

Commerce here includes shops and offices. These have been located along the main pedestrian spine linking the main residential estates in the neighbourhood, Kayole and Dandora. This location will allow them to tap a maximum crowd due to its prominence as a route of movement, and because of the many crowd generating institutions along this route. By linking various precincts, the commercial spine serves to integrate the whole centre.

Market and Transit Point.

These two have been located within the same precinct. The location of the railway station depended on the railway line. To minimize transfer distance the bus station has been located near the railway station. The location of the market near the transit point is an effort to tap the commercial potential of the crowd generated by the transit point.

Civic Group.

The location of the civic group took into account the prominence desired in visual, geographical and associational terms. The civic group has been located on the most visually significant point, i.e. the highest point in the centre. Geographically it is at the heart of the centre. Although prominently located, it is by no means isolated. It constitutes an important node along the main commercial street.

Institutions of Worship.

These have been located along the main street. The intention here as pointed out earlier is to integrate them into the life of the centre and to take the advantage of their large masses in creating points of focus. Their contribution to the street scape cannot be overstated.

Hotels.

These have been oriented towards the park while at the same time in close proximity to the main commercial street.

Fire and Police Stations.

These have been located near a peripheral road for obvious practical considerations. Their proximity to the civic group enhances the associational qualities of the civic group.

Hospital.

The hospital has been located near the transit point and on relatively flat land for obvious reasons.

Sports Stadium.

The sports stadium has been located near the transit point. This will facilitate easy reach by visiting teams and avoid 'ad hoc' transit points evident near the present city stadium during soccer matches.

Technical School.

The technical school has been so located that it will constitute part of the park and in the process avoid creating a gap in the continuity of the urban fabric. Although essentially separate, it has the potential of being well integrated into the urban fabric as it develops.

Light Industries.

Light industries have been located in their own precinct but linked to the rest of the centre. Being an important work area, it has proved prudent to locate them near the transit point. An allowance has been made for informal light industrial activities along the southern edge. They may as well be catered for since they will in any case develop as the case studies indicate.

Park.

The park has been provided for in an area not very

suitable for development. The advantage of two streams flowing through the centre has been utilized and a lake has been created. The lake can provide for boating. Its presence in the park is visually pleasant.

URBAN FORM

In general the overall urban form was geared towards evolving a closely knit urban fabric which is both satisfactory in physical environmental terms and local in character. At the same time, all the four different urban forms discussed under 'conclusions' have been adopted in evolving the urban form. The four floors along the main street have the twin purpose of accommodating the higher space requirements of commercial activities and provide for character gradient between a commercial street and residential streets behind.

STRUCTURE AND MOVEMENT PATTERN.

The pedestrian movement constitutes the main structuring element within the centre. By and large it has been designed to achieve a clear main route of movement which is punctuated by nodes - urban spaces, static in nature with buildings of both functional and associational significance. Interest has been sustained by vista closure while retaining the clarity of route of movement. The main roads take peripheral location. The road to the West has a wide sweeping curve while that to the East is straight. Since these streets are used as reference lines in the arrangement of street blocks, the contradiction in their geometry gives differing orientations to the blocks and therefore interest.

The road to the West avoids monotony by the curve while the peripheral road to the East although straight avoids monotony through topography. Juja and Komo Rock Roads position as primary roads is clear. As suggested in the 'conclusion' the hierarchy of both pedestrian and vehicular movement has been achieved by different levels of complexity.

In imageability terms, the centre has clear edges. The main pedestrian movement although not straight has a strong image on account of nodes with buildings which besides having strong associational meaning are outstanding in their volumes. These nodes therefore act as reference points both internally and externally. This brief commentary should be read in conjunction with the drawings and photographs of the model.

PHASING

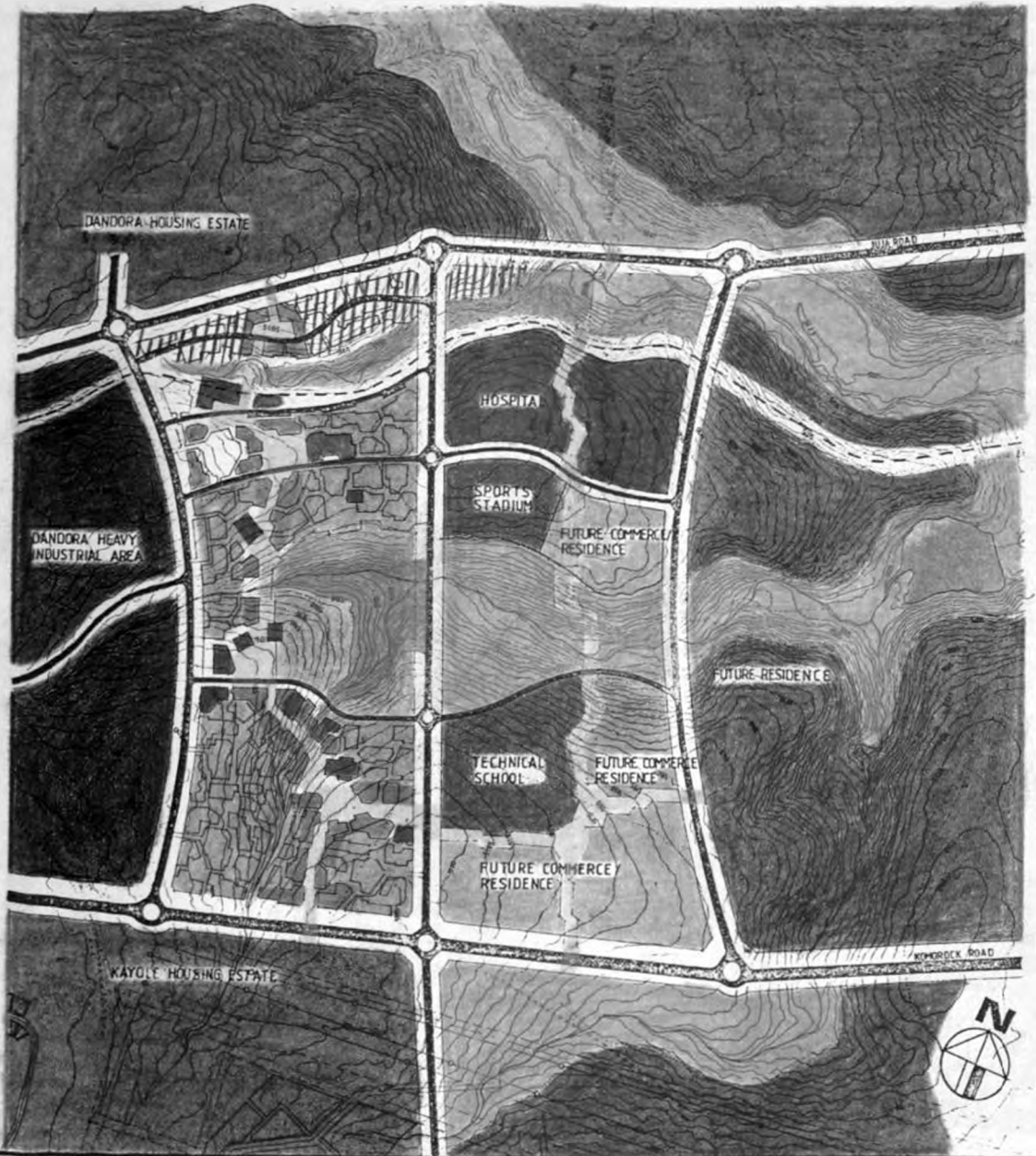
It is difficult to establish a precise phasing programme for even if one is made programmes for projects of this magnitude are seldom followed by the City Council. It is nevertheless important that the market, the transit point, and the civic group be developed in the first instance. With these three acting as a nucleus, there is no doubt that the rest, a majority of which will be developed privately, will be much easier to develop. Except for the institutions in the sector to the East, the Western Sector should be developed as completely as possible before development on the Eastern Sector commence

DENSITY.

The plot ratio is geared to produce a low energy and therefore a low level urban settlement. The main commercial street, coloured yellow in Locality plan, has a plot ratio of 3.0 and ground coverage of 75%. This gives an average of 4 levels. The more mixed developments behind the main commercial street have a plot ratio of 1.5 and a ground coverage of 75%. This gives an average of two levels. As explained earlier the intentions in allowing for these differences in levels are: to create a character gradient between the main commercial street and the mix use buildings behind, to allow for more space in buildings with higher intensity of commercial activities, and to allow the main commercial street to be visually more prominent since it is a major structuring street.

PLOT SIZE.

As suggested in the 'conclusion' plot dimensions have been kept small. The majority of plots range from 10 x 25, 10 x 30, 15 x 30, and 20 x 40 m² in size. These sizes give width, length ratios of 1:2 to 1:3. These ratios lie within the recommended ratios for economy of infrastructure. Some plots are irregular as a response to required street geometry.



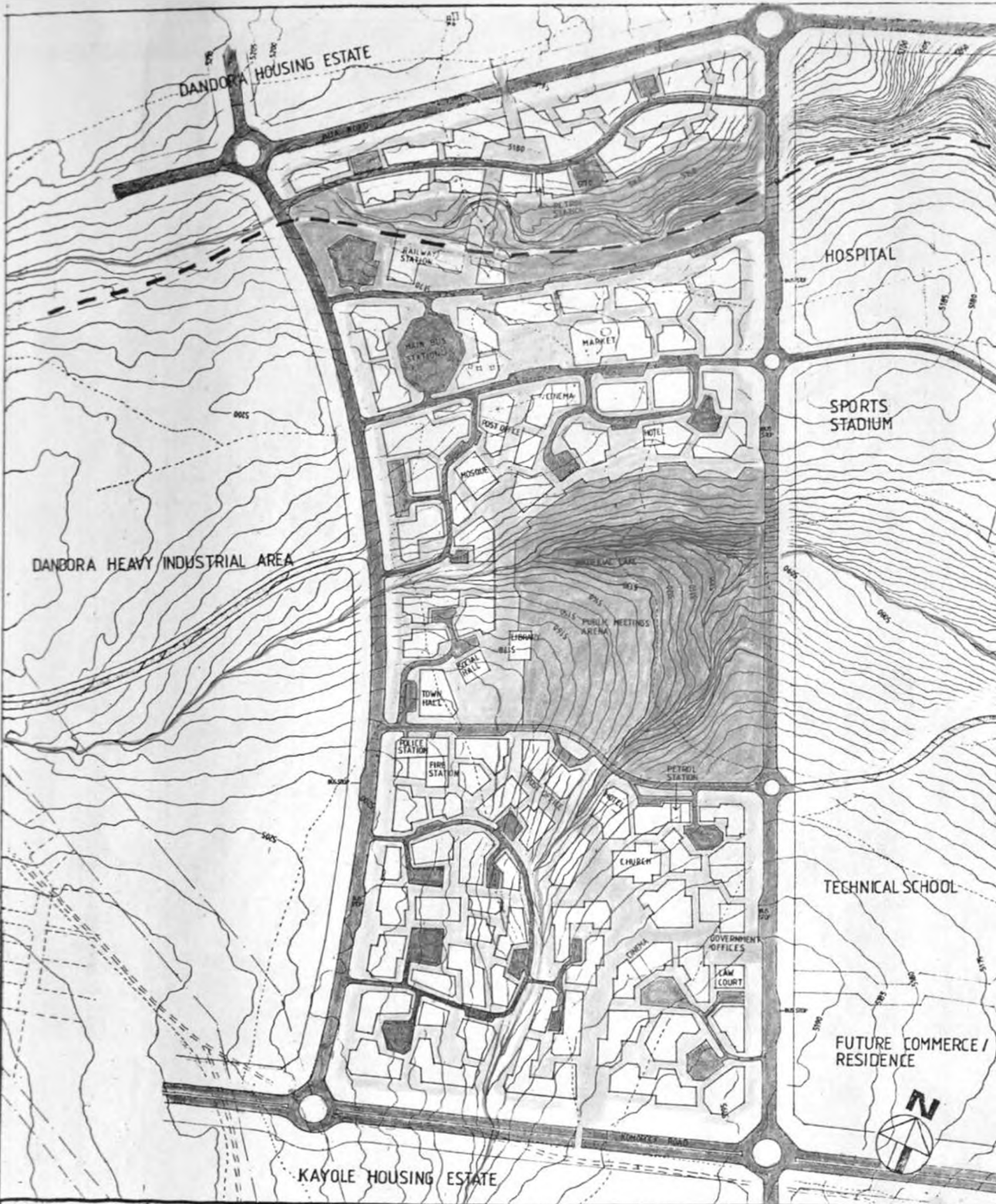
**KAYOLE DISTRICT CENTRE
LOCALITY PLAN**
SCALE



KEY

-  ROADS
-  RAILWAY LINE
-  PEDESTRIAN ROUTES
-  PARK AREAS
-  INSTITUTIONS
-  HEAVY INDUSTRY
-  LIGHT INDUSTRY
-  RESIDENCE
-  COMMERCE
-  COMMERCE / RESIDENCE

M. A ARCH. THESIS
JAMES KAMAU KAROGI
UNIVERSITY OF NAIROBI



KAYOLE DISTRICT CENTRE
LAYOUT PLAN
 SCALE 1:10000

M. A ARCH THESIS
 JAMES KAMAU KAROGI
 UNIVERSITY OF NAIROBI



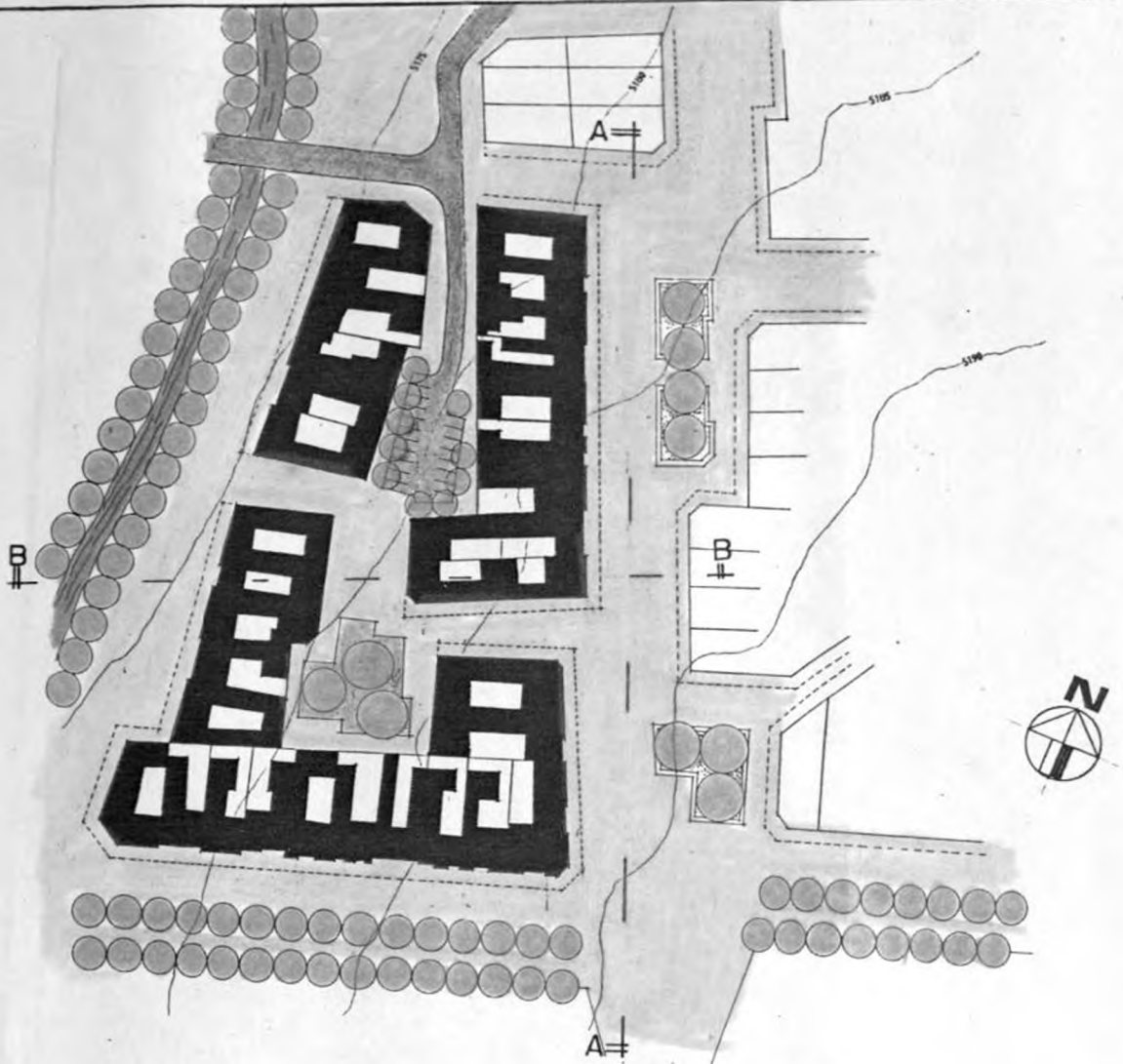
KAYOLE DISTRICT CENTRE
SEGMENT PLAN
SCALE 

M. A ARCH. THESIS
JAMES KAMAU KAROGI
UNIVERSITY OF NAIROBI



KAYOLE DISTRICT CENTRE
SEGMENT PLAN
SCALE 

M. A ARCH. THESIS
JAMES KAMAU KAROGI
UNIVERSITY OF NAIROBI



SECTIONAL ELEVATION B-B




ELEVATION A-A

KAYOLE DISTRICT CENTRE
TYPICAL BLOCKS
SCALE 

M. A ARCH. THESIS
JAMES KAMAU KAROGI
UNIVERSITY OF NAIROBI



KAYDLE DISTRICT CENTRE
LAYOUT MODEL
SCALE 



M.A. ARCH. THESIS
JAMES KAMAU KAROGI
UNIVERSITY OF NAIROBI



BIBLIOGRAPHY

1. Alexander, C. A City is not a tree, Architectural Forum Vol. 122, 1965.
2. Alexander et.al. A Pattern Language, New York Oxford University Press, 1977.
3. Bacon, E.M. Design of Cities. Thames & Hudson Ltd., London, 1974.
4. Banz, G. Elements of Urban Form. McGraw-Hill, 1970.
5. Breeze, G. Urbanisation in Newly Developing Countries. Prentice Hall of India Private Ltd. New Delhi, 1969.
6. Caminos, H. Urban Dwelling Environments. The MIT Press, Massachusetts, USA. MIT Report No. 16, 1969.
7. CIAM The Heart of the Cities. Lund Humphries, London, 1952.
8. Collins, G.R. The Modern City: Planning in the 20th Century. London
9. Cullen, G. Townscape. The Architectural Press, London, 1961.
10. Evenson, N. Chandigarh, California, 1966.
11. Gatt oni, G. & Patel, P. Residential Land Utilization Case Study: Nairobi, Kenya. MIT Massachussets, 1973.

12. Gibberal, F. Town Design. The Architectural Press, London Ed. 2, 1955.
13. Gideon, S. Space, Time and Architecture, Harvard University Press. Third reprint, 1959.
14. Grove, D. The Towns of Ghana. Ghana University Press, Accra, 1964.
Huszar, C.
15. Gutkind, E.A. International History of City Development. Vol. I to VIII Free Press, New York, 1964-1970.
16. Howard, E. Garden Cities of Tomorrow. London, 1902.
17. Hetzen, H. Tapiola, Harvard, 1971.
18. Jacobs, J. The Death and Life of Great American Cities. Random House, New York, 1961.
19. Keebel, L. Principles and Practice of Town and Country Planning. Walker & Co., Middx. Great Britain, 1969.
20. Krier, B. Urban Space. William Clowes & Sons. Beccles, Great Britain, 1979.
21. Lewis, D. (Ed.) Architecture Year Books 12 and 13. Elek Books, London, 1968, 1971.
22. Lynch, K. The Image of the City. The MIT Press Ed. 10, 1972.

23. Maholy Nagy, S. Matrix of Man, Pall Mall Press, London.
24. Maki, F. Investigation in Collective Form. Special Publication Washington University, St. Louis, June 1964.
25. Martin, L. Urban Space and Architecture. Cambridge University Press, 1972.
26. Menezes, L. Minor Shopping Centres Technical Paper E23.
- Land Use Standards Nairobi Urban Study Group. Technical Paper No. LU13.
27. Morris, A.E.J. History of Urban Form
28. Mumford, L. The City in History Harmondsworth, Middlesex, England 1961 Reprint 1979.
29. Mutiso, Menezes, (Architects) Buru Buru Leisure Survey Not published.
30. Nairobi City Council Metropolitan Growth Strategy Vol. I, and Vol. II, 1973.
- Dagoretti Structure Plan.
- Proposed Alternative Structure Plan for Nairobi South B, Villa Franca, and Eastern Area.

- District Centres as
Appropriate Location for
Clustered Public Service,
Research Memo.
31. Osborn, F.J. New Towns, London, 1977.
32. Perenyi, I. Town Centres, Planning and
Renewal. Akademiai Kiado,
Budapest, 1974.
33. Schulz, C.N. Existence Space and
Architecture. Praeger, New
York.
34. Shadrack, W. The Man in the Street.
Harmondsworth, England, 1975.
35. Sharon, A. Planning Jerusalem. Werdenfeld
and Nicolson, Jerusalem, 1973.
36. Stanbli, W. Brazilia London, 1966.
37. Stein, C. New Towns for America. New
York, 1951.
38. Venturi, R. Complexity and Contradiction
in Architecture. Museum of
Modern Art, New York.
39. Vitruvius. The Ten Books on Architecture.
Early 1st AD.
40. Ward-Perkins. Cities of Ancient Greece and
Italy, New York, 1974.
41. Wittkower, R. Architectural Principles in
the Age of Humanism. London,
1961.

42. Zucker, P. Towns and Squares. The MIT Press Forum, Vol. 122, 1965.