LAND USE PATTERN AND TRAFFIC PROBLEM IN CENTRAL LAGOS - AN ASSESSMENT OF THE RING RDAD DEVELOPMENT

M.Sc. (Urban & Regional Planning) Thesis

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C E R T I F I C A T E

This is to certify that this thesis has been submitted in partial fulfilment of the requirement for the award of the Degree of Master of Science, Urban and Regional Planning.

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Oluwaseyi Kolade

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who may well expect to see and hear more about it.

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PART - ONE

RESEARCH PROBLEM

CHAPTER - ONE

1.00 INTRODUCTION

An underlying factor to many problems of traffic in an urban area is not unrelated to its Land Use potential and the status of its transport system. For example trips are made to the central area because it offers greater access to many parts of the urban area. The reason for the trips to the central area in many developing countries is borne out of the fact that Land Uses are more concentrated there and inversely proportional to its population.

For this reason, large population of the urban area are dependent on the central area for jobs and other services, while the central area looks up to its region for labour supply. The resulting imbalance in labour supply is therefore removed by trips made to the central area using automobiles as a means of personal mobility thus creating the problems of traffic congestion and other traffic related problems.

In many instances, it has been assumed that the problems of traffic could be solved by improving the transportation system, through construction of more bridges, construction of Ring Roads and by-passes and other physical improvement strategies. This is often a mis-conception

of the problems of traffic and misplaced priority in finding solutions to the problems as little or no thoughts are given to the implication of the changes and improvements of the transport system on Land Uses.

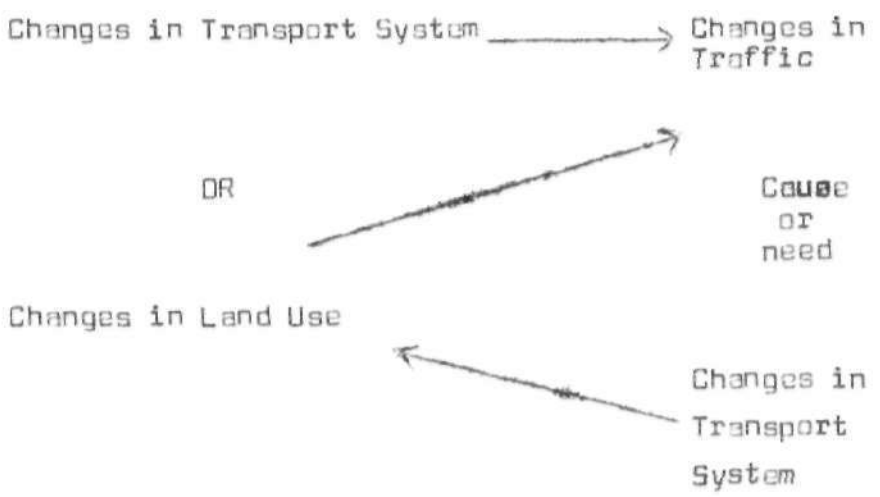
It is possible to explain why Land Uses generate traffic and cause problems. Land Use potential of an area depend on the transport system that provide access to it, and if the system is properly linked with other areas, it is possible that traffic will be generated or attracted to the area. So if Land Use capability changes, traffic generated will be affected, and in the same way, if transport system linking various Land Uses change , traffic generated or attracted will be affected.

From the foregoing, one can make connection between land use, transport system and traffic. It is the irteraction that exist between them that makes it all the more necessary not to deal with them in isolation when it comes to finding a solution to traffic problem.

Barrie Needham explaining the theory of traffic and Land Uses observed that although the interaction is well known "... yet frequently ignored in transport planning: Transport plans usually propose changes in transport system without considering the changes which that might cause in Land Use"[1] In the same context, it was

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1. Needham, Barrie (1977) Interaction Between Traffic and Land Use. Urban and Regional Planning series, Vol.17, Pergamon Press, PG.132.



Interaction Between Land Use and Traffic

Source: Needham, Barrie (1977) Interaction between Traffic and Land Use. Urban and Regional Planning Series, Vol.17, Pergamon.

FIG 1

written of Proud love (1968) criticizing a transport study. "The effect on Land Use of road capacity falling below demand is not considered, but is likely to lead to rapid changes which could invalidate the assumptions...[2]

If we consider that certain land uses could take advantage of physical improvements and continue to grow out of proportion encroaching on areas occupied by equally important land uses; in no time, we find the problem of

2. Proud love, J. A. (1968) Some comments on West Midland Transport Study. Traffic Engineering control, Vol.10, No.7.

traffic surfacing only to be solved using the same sets of strategies. Solutions to problems of traffic should be pursued vigorously with long term effect as the basic aim and not with the palliative short term solutions accorded it.

It has been noted in many places in Nigeria that the authorities charged with the responsibility of improving access, waste a lot of tax payers' money with little or no success to their credit. The various consequences of decisions to locate land uses, consequences to improve or change transport system were not considered when handling problems of traffic.

1.10 THEORETICAL BACKGROUND

We shall understand the problem of traffic in metropolitan central areas if we understand the functions found in them. In the modern central metropolis both retail and wholesale trade are concentrated there, also there are all manner of commercial services such as banking houses, investment firms, advertising agencies and other professional services. Non-commercial functions such as centres of Government recreational establishment and dwelling places. This is no complete list but it is enough to give clear indication of central area functions that it is not just a shopping district.

There is reason to support the hypothesis that the initial focus of activities is at the central area and in developed countries, most of these activities have disappeared for one reason or the other.

Two basic reasons have been given why central locations are advantageous, Haig gives the clue to this in his work - "It is the minimizing of transportation cost"[3] The centre is the most convenient to the greatest number of people. The emphasis however in this context is space relationship between business and client and between business and employees.

---

3. R. M. Haig, Major Economic Factors in Metropolitan Growth and Arrangement, (N.Y.: 1927).

The second reason was explained by Haig in his concept of "cohesion of function".[2] As all functions must be carried on in small compass.[3] The functional constellations of central areas are bound together by the same kind of force that binds them internally.

This picture of the central area is one of common advantage in location at the focus of transportation and mutual advantage in proximity among the Central Land Uses. The unique convenience offered by the central area is built into two components qualities

1. Accessibility
2. Availability

Accessibility is the ease of movement from some point of origin to the destination area. While availability refers to the kind of services and activities within the destination area.

This analysis of the functional bases for the central area also suggest ways in which the center might loose in advantage. One way in which this might happen is through reduced accessibility.

Reduced accessibility imply traffic congestion and lack of parking. The usual view now is that the central area is now more troublesome in terms of accessibility.

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2. R. M. Haig, Major Economic Factors in Metropolitan Growth and Arrangement, (N.Y.: 1927).

3. Ibid.

But when we think of its importance especially in developing countries, the central area is even becoming more accessible than before. More people are entering it. The pain may be greater, but they still come.

In developed countries, the pattern of function shifts as many central area function suffer from reduced accessibility and are seen in outlying areas due to traffic and parking problem which have become so serious in spite of counter measures that basic functional changes have brought in central areas.

The repercussion of traffic problem are sweeping and they extend far beyond the direct and immediate effect on the central area. Businesses forced to relocate have robbed off the center of its tax base and this phenomena has control over the now rampant ailment of central areas in developed countries refered to as "Central Decay."

It was on this, that Haig argued again that it is possible that the Urban Structure is undergoing same functional change which is altering some significant space relationship and giving rise to basic structural shifts in the arrangement of Land Uses. In terms of efficiency, he questioned whether certain activities are not now more efficiently located outside the central area.[4]

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4. Haig, Op.cit. P.28.

But in developing countries, it is usual to observe that more intensive Land Uses replace less intensive uses and force them out and in doing so, aggravating the already bad state of traffic. Terminal facilities become more cumbersome to provide, delays of congestion become more manifested and considerable confusion is experienced everyday.

Many of the manifestations of Land Use relocation and change in developed countries are often assumed to be unfortunate and destructive; actually in view of the magnitude of traffic problems in central areas of developing countries, it is rather a fortunate event since the forces of natural adaptation to new condition and total efficiency are at work to help them out of the confusion found in central areas.

The problems of traffic in central areas are not due to the size of the central area, but rather a problem of growth and rigidity in distribution of land uses, with all there is to say about relocating some central Land Uses elsewhere in the metropolis, the decongested central area will undoubtedly become more efficient and more productive than the traditional central area.

1.20 TRAFFIC PROBLEM IN CENTRAL LAGOS

Central Lagos is the largest employment centre in Metropolitan Lagos and the least populated of the major residential districts. The area has problems of traffic because of the concentration of essential Land Uses needed by the bulk of the metropolitan population for the achievement of their goals. In view of this, trips made to the Central Area are causing problems when many people have to be at their places of employment almost at the same time.

Apart from the concentration of jobs and services offered by the central area, the pattern of distribution of Land Uses are not conducive to orderly movements within and between different Land Use Zones.

Central Lagos is dominated during the pre-colonial periods by Mangroves and Swamps more than by human settlement. With the expansion of trade activities on the Island, Mcgregor canal was constructed first for drainage and later channelized to be connected with the Ring Road.

The process of urbanization that began in the 19th century continued on to the 20th century and the constitutional changes over times favored the

development of Lagos, especially central Lagos. Central Lagos was the capital of the colony and this position enhanced and aggrevated the situation found in central Lagos today.

This is because, the increase in revenues brought about the much needed fund for infrastructural development. Such as ports which brought about the imprecedented growth of trade. The consequence in this development is obvious and the effect was felt deeply especially in terms of traffic generated, cau sing congestion. This growth however implied increased employment opportunities and expansion of commercial activities in Central Lagos.

The cost of rapid development and consolidation of modern shopping and commercial uses in the C.B.D., over-burdened the already substandard structures. After independence, the area received more development especially around Tafawa Balewa Square (Race Course) as the area housed Major Diplomatic Missions. Lagos became the Federal Capital in 1960..

Inspite of the depression during the Civil War years, the 2nd National Development Plan was most ambitious in the under-taking of project programming for Lagos Metropolitan and in particular for Central Lagos.

It is therefore no wonder that the problems of traffic in Central Lagos today were due to the fact that the colonial Government did not exhibit foresight in its planning principle; the ~~past~~ era independence even did not fare better either. The area has not been planned for its present role.

Most of the functions in the Central Area are those which attract a lot of traffic from outlying areas; connected to the central area over four bridges. Carter Bridge, Eko Bridge, Third Axial Bridge and the Independence Bridge.

The major express way in the study area is the recently constructed Ring Road - a limited access by pass around Central Lagos. This Ring Road provide six divided lanes to connect all the roads leading into the Island. Besides this arrangement, there is a continous peripheral road of 4 - 6 lane

Most of all the internal collector and arterial roads have at least 2 travel lanes and in some very busy corridors with intensive uses, 3 traffic lanes are provided to run one way (Fig.2 and 3) show the functional classification of existing Road way network in Central Lagos.

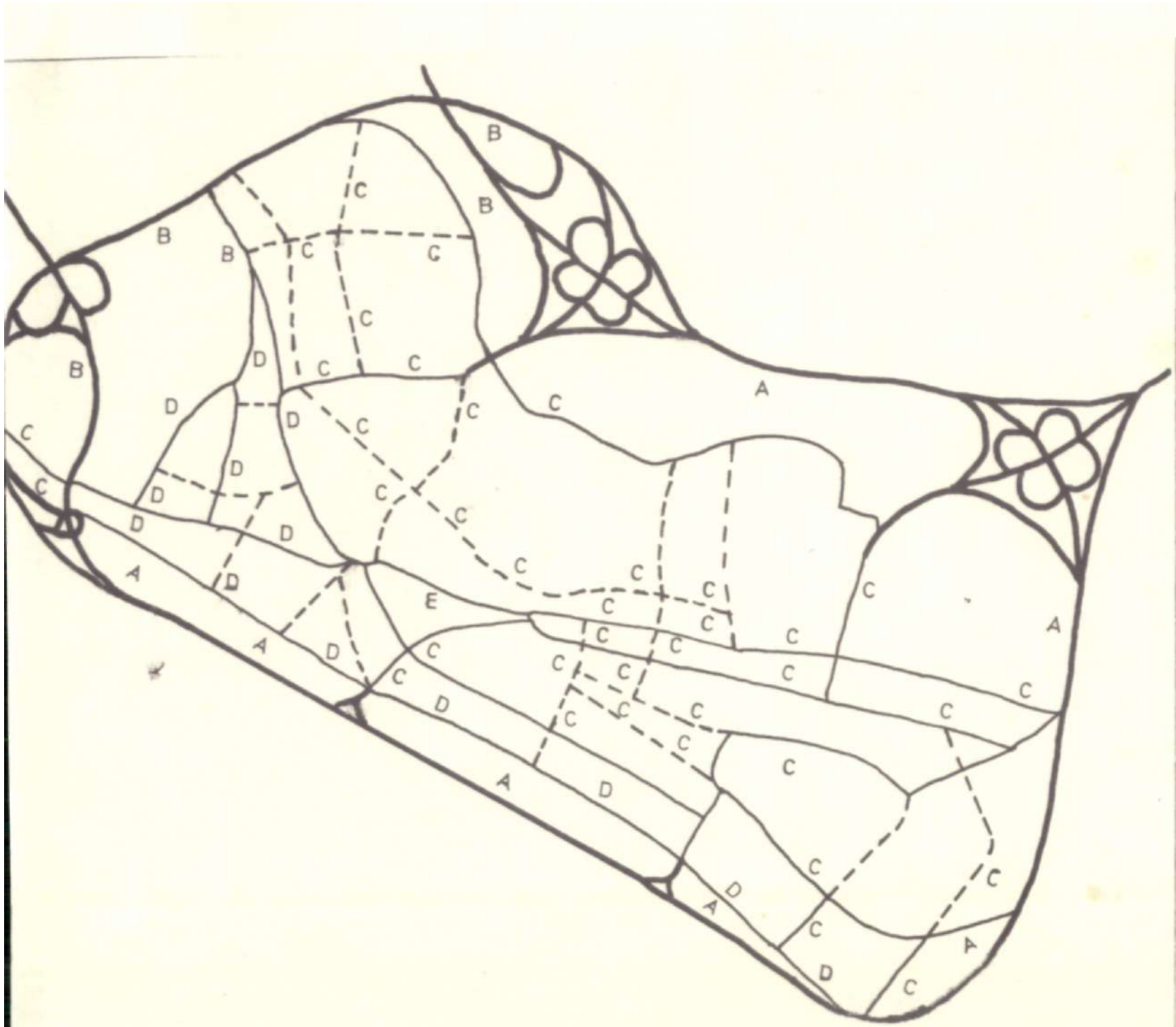
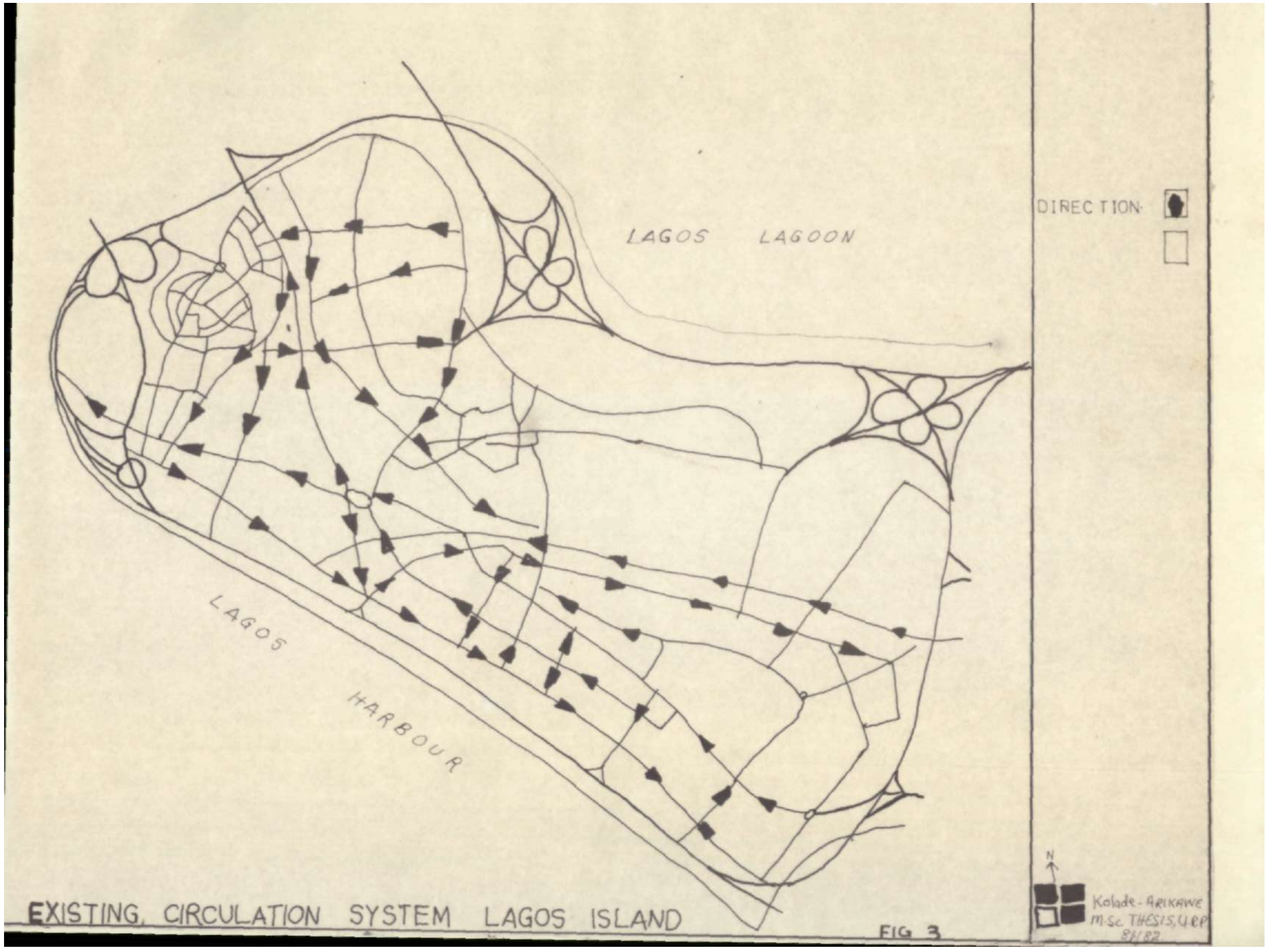

CENTRAL LAGOS
EXISTING ROADWAY NETWORK
& FUNCTIONAL CLASSIFICATION
FUNCTIONAL CLASSIFICATION
EXPRESS WAY
ARTERIAL
COLLECTOR
NUMBER OF LANES
A 6 LANES
B 4 LANES
C 2 LANES
D 3 LANES
E 1 LANE
N
1:20,000
Kolade-Adisa M.Sc. Thesis

FIG 2



EXISTING CIRCULATION SYSTEM LAGOS ISLAND

FIG 3

In spite of the improved road network, the problem of traffic in Lagos Central Area seemed to be taking new dimension each time, even though there are many efforts directed in the past towards solving the problem.

It is obvious that other factors which are responsible for the deteorated condition of traffic in Central Lagos have not been given full attention.

The factors which could seperately or collectively militate against free flow of traffic in many central areas are as follows

1. Physical Factors
2. Human Factors
3. Institutitional Factors

The interaction between and within these factors as shown in the matrix on table 1, could have the following effects on traffic flow.

(a) 1.21 Physical Factors

i. Physical/Physical Factor

ii. Physical/Human Factor

iii. Physical/Institutional Factor

The effects are mostly those that would affect road design since there are certain constraints.

TABLE - 1

THE PHYSICAL, HUMAN AND INSTITUTIONAL FACTORS AFFECTING CENTRAL AREA TRAFFIC FLOW

EFFECTS OF PHYSICAL FACTORS	Physical(Environment)	Human (Drivers, Planners, Maintenance Workers, Artisans Police other road users.	Institutional (Federal and State Gove ment Agencies incharge of Transporta
	• Physiographic configuration of the Central Area	a. Poor Road Geometrics b. Road Failure of Sagging c. Flood hazard	• Economic cost to development
:UMAN FACTOR	a. Accidents b. Destruction of road-side furniture c. Pollution d. Overstrained facility e. Lack of foresight f. Zoning error g. Protracted nature of road repair	a. Lack of road courtesy b Undisciplined parking c. Alcohol effect/Accident d. Congestion due to more vehicles e. Encroachment on road space garbage disposal	a. Disregard for the Law and Agencie b. Flagrant disobedience of road sig
NSTITUTIONAL	a. Disregard for physical environment b. Non integration of land use and transportation policy c.	a. Inadequate traffic control b. Inadequate public transport c. Poor communication services d. Ineffective penalties for traffic offence	a. Lack of co-ordinated effects in t ffic control planning

In the case of Central Lagos, the subsoil condition is ... type that would need extra manipulation in order to get durable roads and the effect of this is the decrease in the amount of good roads to be constructed due to the cost of development. Also the physical location of the Island have necessitated development of Bridges to link other parts (Plate 1). So here, we observe that the physical constraints to the development of more roads force the institutional authorities to consider building either substandard structure which would fail sag or be carried away by flood because there is not enough fund to cope with the problems of the physical environment. If number of road construction is decreased because of cost, then, it is possible that other arterials would be forced to carry more than their share of traffic and the result is congestion.



Plate - 1

CONSTRUCTION OF BRIDGES TO LINK CENTRAL LAGOS

Because Central Lagos is Isolated Bridges such as these in the Plate have had to be built to link other parts the cost of construction involving millions of Naira might have reduced the number of roads to be built to improve traffic condition in the Centre.

(b) 1.22 Human Factor

i. Human/Physical Factor

ii. Human/Human Factor

iii. Human/Institutional Factor

There are reasons to believe that the single most important factor that affect traffic flow is due to human factor expecially in Central Lagos.

There are various mistakes in the distribution of Land Uses, mistakes in zoning of uses and lack of foresight in development of facilities in relation to its potentials. All these factors have led to the problems of traffic. A look at some development in Central Lagos would definitely make one question the rationale behind its location in that specific area especially when the area is experiencing acute traffic problem.(See Plate - 2).

Other problems resulting from these mistakes are accidents, vandalism and of course overstrained facility. (See Plate - 3).



Plate - 2

RECENT CONSTRUCTION IN A CONGESTED CORRIDOR

The construction of office complex in the fare-ground and on the left in the picture shows the type of p planning mistake in terms of non-consideration for traffic to be generated. The location is the already congested segment of Balogun Street. In fact the particular segment hav have very high pedestrian flow, high frontage development and no off street perking within walking distance. By the time the building start functioning traffic on it would be worse than it is now.



Plate - 3

OVERSTRAINED FACILITY

Problem created by haphazard development in the background, construction going on in spite of the traffic problem along this same corridor.

This problem is further aggravated by the lack of road courtesy, undisciplined driving usually found amongo the urban stage coach carriers as could be seen in Plate - 4. In the same way, they load and unload passengers right on the streets causing undue delay for other motorist.

There are also problem of Hawkers trying to sell to motorist and in the process causingdelay as seen on Plate 5.

Delay to motorist is also caused by street trading where pedestrian are forced to encroach on the road space because the sidewalk provided have been taken over by street traders as in Plate - 6 or in same cases side walks are not provided at all for pedestrian (Plate - 7) instead there are open drains which for all practical purpose in dangerous to pedestrian safety.



Plate - 4

UNDISCIPLINED DRIVING

The usual scene in congested streets, commercial drivers are often seen rushing to the next stop to get more passengers with the result that they drive recklessly causing accidents on several occasions.

It could also be observed on the left that loading and unloading is done right on the street without regard for other road users.



Plate - 5

PROBLEM OF HAWKERS

Vehicles are seen slowing down in an attempt to purchase items on the road the consequence of this to other motorist is seen here as the next vehicle comes to a complete halt and this will continue down the road.



Plate - 6

SIDE-WALK TRADERS

Side walk traders forcing pedestrian on the street to interfare with free flow of traffic.



Plate - 7

LACK OF PEDESTRIAN SIDE-WALK

Lack of side walk for pedestrian, force Pedestrian on the street with the resulting - pedestrian vehicular conflict.

Double and Triple parking, blocking of road junctions, the activities of artisan and the mechanics noted for mounting work shops in any available space including road side pavement and under bridges (Plate - 8) and also disregard for traffic regulation (Plate - 9). There are out right abuse of the Law in Central Lagos when vehicles are seen parking directly under no parking signs.

Pedal Motor-cyclists, not only cause mishaps, but also have great disregard for their lives and limbs.

1.23 Institutional Matrix

i. Institutional/physical factor

ii. Institutional/Human Factor

iii. Institutional/Institutional Factor

The extent to which various agencies charged with planning the city environment lack co-ordination is manifested in the way various development comes up without proper co-ordination of activities.



Plate - 8

ROAD-SIDE MECHANIC

Road side Mechanic workshop on the street impede free flow of traffic.



Plate - 9

VIOLATION OF TRAFFIC REGULATION

This motorist was caught by the Law Officer trying to enter a one way street. This is an example of violation of traffic signs which is the most obvious problem found in Central Lagos.



Plate - 10

TRAFFIC PROBLEM DUE TO COMMERCIAL ACTIVITY

Commercial development under the ring road. Note the intensive commercial activity. For all we know, this is a real traditional market.



Plate - 11

ON-STREET PARKING HABIT

In front of the market, motorist are forced to park on the street thereby causing traffic congestion.



Plate - 12

WRONG LOCATION FOR TRAFFIC SIGN

This no Parking Sign was seen placed close to a building on Marina Street. The Sign is believed to be warning motorist but the location is not suited for the type of message it is trying to convey.

of activities. The result of such action is the traffic problem seen at various locations in Lagos. The most recent of this example is the commercial activities going on under the Ring Road. For all intense and purposes, the aim of the Ring Road is to relieve congestion, but the type of activities (See Plate - 10) associated with it is not ~~that~~ what was envisaged by the authority responsible for its construction, but the Lagos Island Local Government is collecting revenues from the traders here. The implication of this is clear; traffic would be forced to stop around here (Plate - 11) to purchase items thereby slowing down other vehicles. This way I believe the aim and purpose for the development of the Ring Road is defeated.

Also, there is the relationship between motorist and transport planners. In many areas in Lagos . It could be observed that the road signs which are available are substandard in nature and even where they are found to be good, they are wrongly placed to the effect that one would wonder what they are there for.(Plate - 12). Lack of adequate sign warning motorist about undisciplined driving and bad road etiquette.

Another unresolved issue in planning is the la lack of cordial relationship between levels of Government and this have affected the nature of traffic on our streets; due to abandoned projects based on the filmsy excuse of 'Jurisdiction'. This situation have deteorated so much in many places.

Central Lagos, with the Federal and State Government in control have this type of problem especially on traffic control on State and Federal roads within the area.

1.30 AIM AND OBJECTIVES

AIM

Specifically, the aim is to evaluate traffic problem in central Lagos with a view to assesing the impact of the Ring Road Development on traffic flow and Land Use.

This aim is guided by the overall goal of improving the quality of traffic in Central Lagos through creation of increased options for solving traffic problem.

OBJECTIVES

1. To examine Land Uses and the spatial distribution of activity centres and population densities in Lagos Area.

2. To establish the degree of dependency on Central Lagos for employment and services.

3. To examine the pattern and intensity of movement within different movement corridors and the subsequent traffic problem created.

4. To identity Land Uses with traffic generation and attraction capacities.

5. To examine the effect of the Ring Road as a strategy for solving traffic problem in Central Lagos.

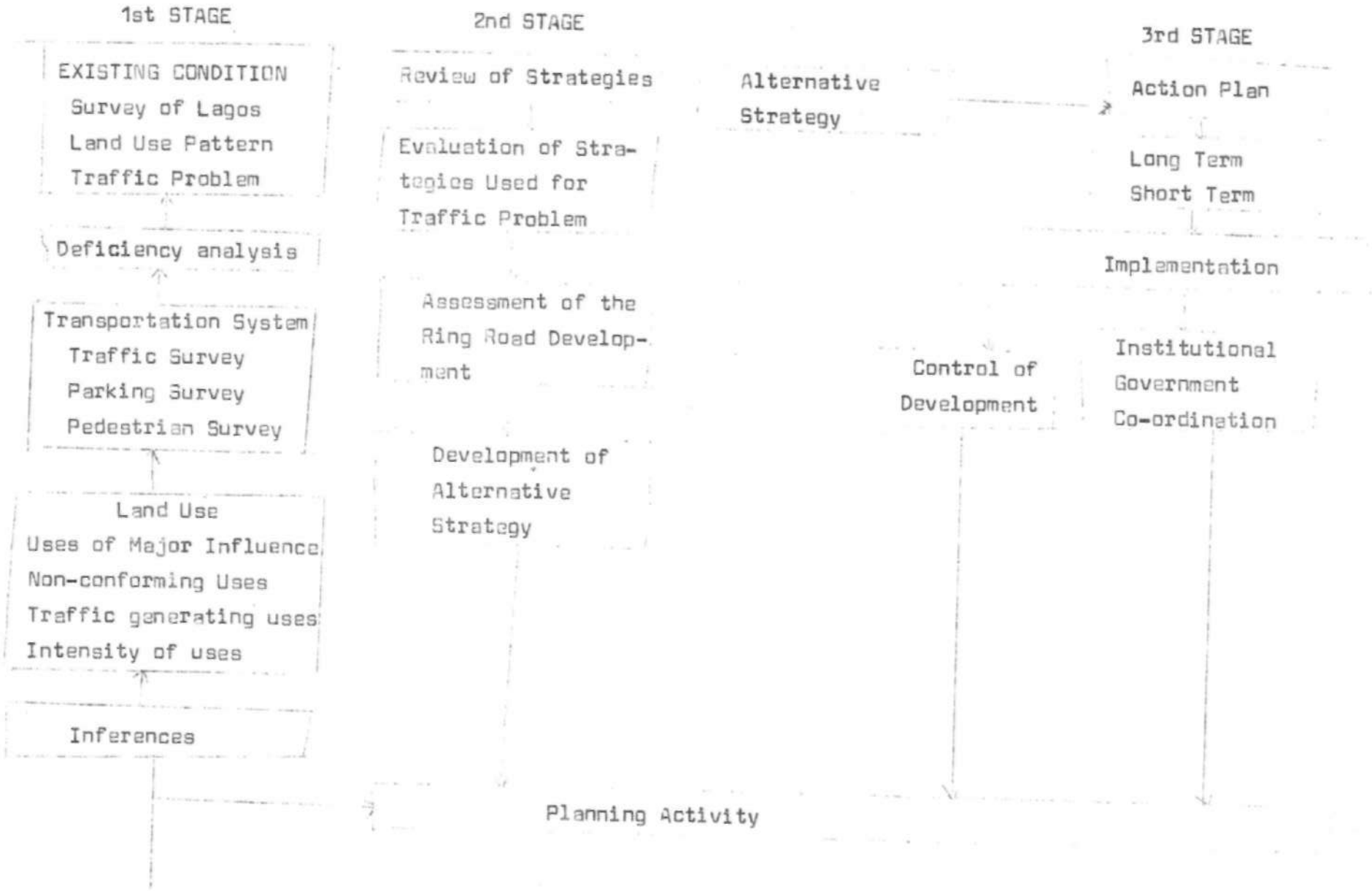
6. To propose relief strategy to decongest Central Lagos.

STUDY PROCESS

The study process shown in Diagram 1 consists of identifying and reviewing existing condition and this include examining the arrangement of Land Uses and the transport system. This aspect requires surveys to ascertain prevailing causes of the problem and deficiencies of the existing system.

Following the analysis of the existing situation is the evaluation of the Ring Road development based on the past situation before the construction of the Ring Road in 1975.

The heart of the study process is the development of alternative strategy with coresponding policy issue goals and objectives.



CONCEPTUAL FRAMEWORK

DIAG 1

1.31 SCOPE AND LIMITATION

Central Lagos, the study area Fig. 4 covers the traditional residential area in the North of Lagos Island, the Central business district in the South West and the Institutional area in the South East.

The area bounded by the Ring Road on all sides, lies to South East of Metropolitan Lagos. Fig.5.

The work is limited to the Central Area of Lagos and does not include Ikoyi Island which is still part of Central Lagos. Hence all surveys conducted exclude all parts of Ikoyi Island.

For the long term proposal, only policy issues have been addressed as the survey of the whole metropolitan region was not carried out; therefore, proposal for centre locations have been made purely on community structure studies carried out by the Master Plan Project unit, the standards used are therefore those proposed by the unit.

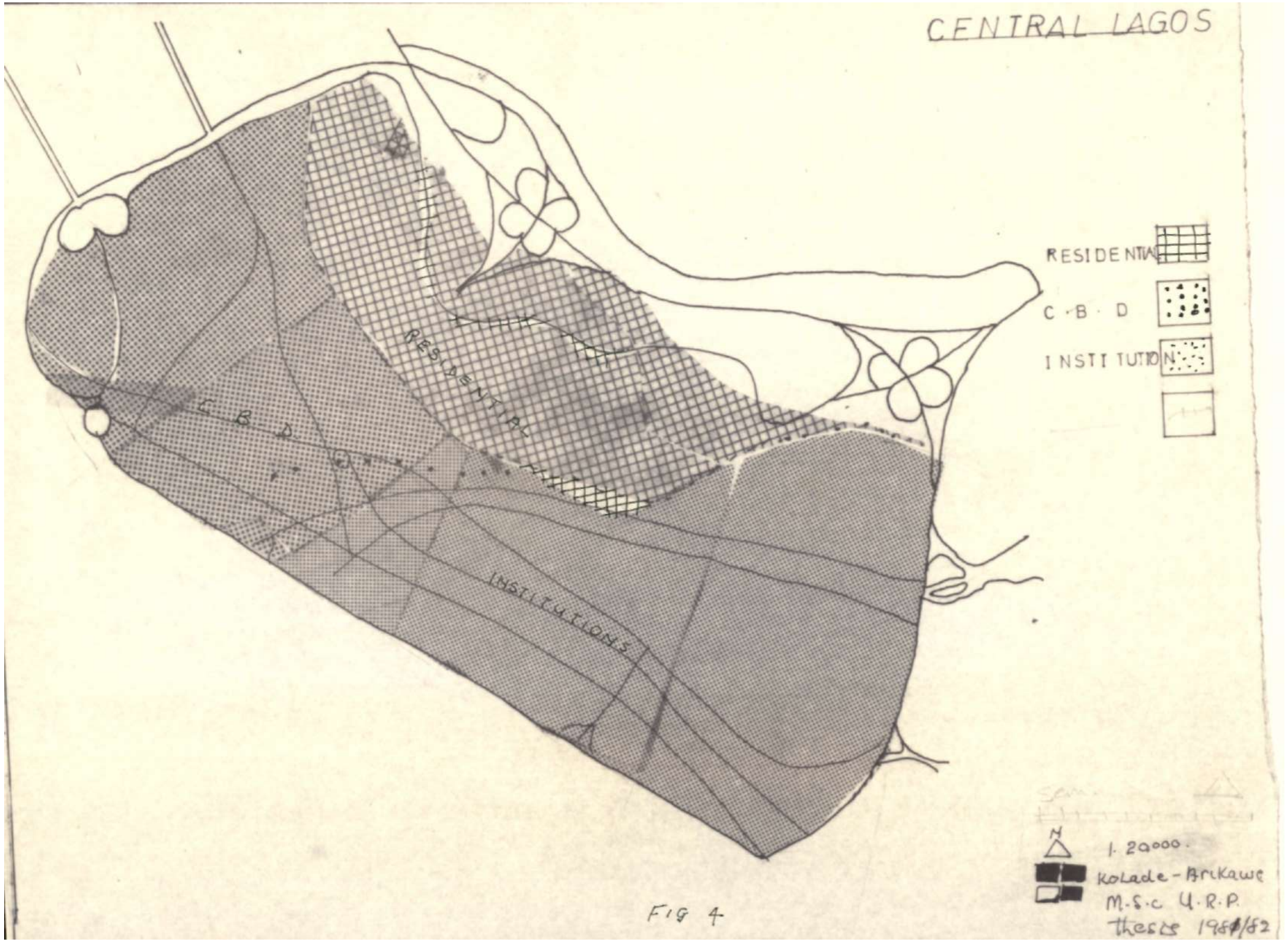
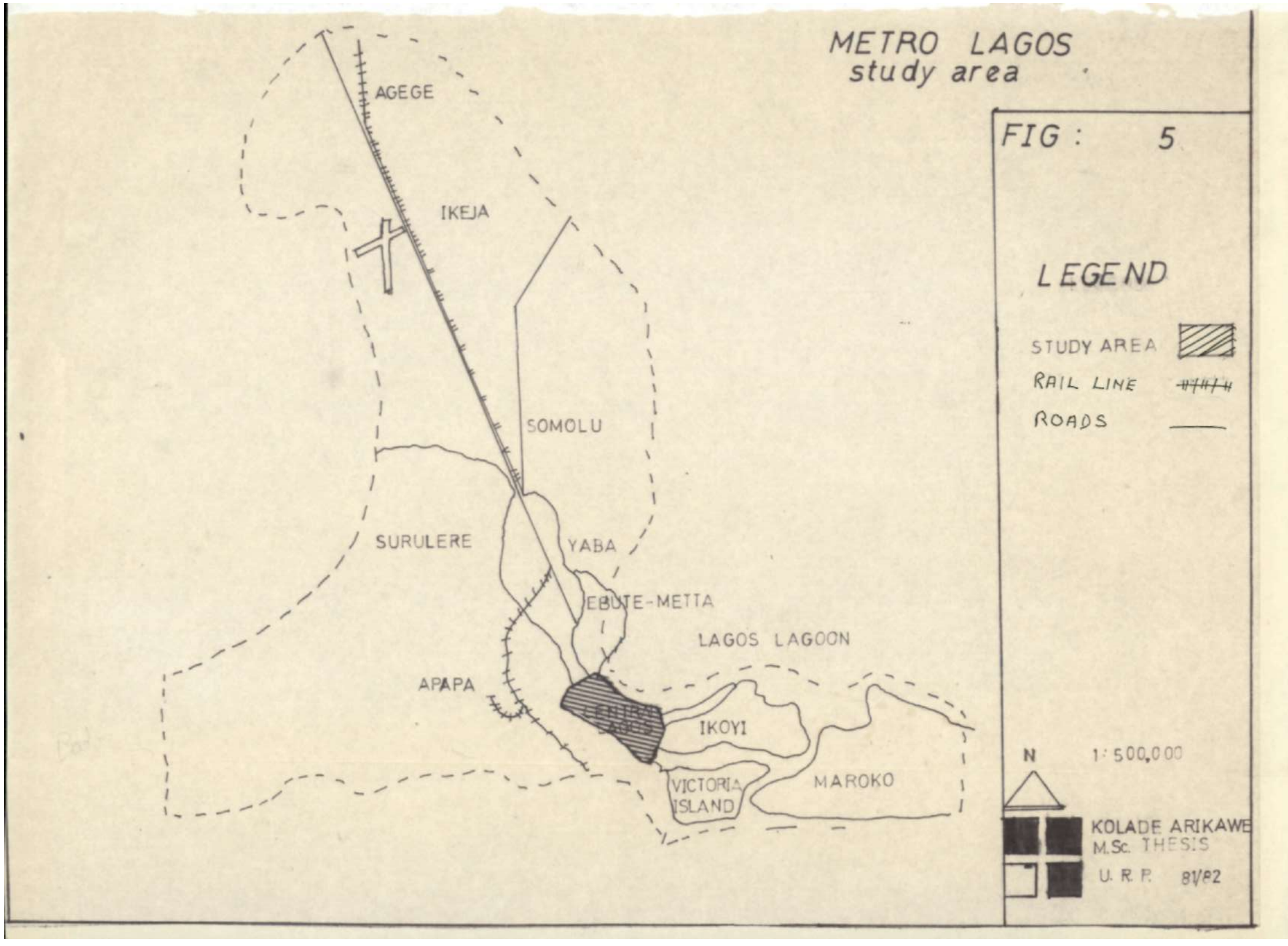

CENTRAL LAGOS
RESIDENTIAL
C·B·D
INSTITUTIONS
RESIDENTIAL
CENTRAL BUSINESS DISTRICT
INSTITUTIONS
N
1. 20000.
Kolade-Brikawe
M.S.c U.R.P.
thesis 1964/62

FIG 4


METRO LAGOS
study area
FIG : 5
LEGEND
STUDY AREA
RAIL LINE
ROADS
AGEGE
IKEJA
SOMOLU
SURULERE
YABA
EBUTE-METTA
LAGOS LAGOON
APAPA
IKOYI
VICTORIA ISLAND
MAROKO
N
1:500,000
KOLADE ARIKAWE
M.Sc. THESIS
U.R.P. 81/82

1.32 METHODS OF DATA COLLECTION

The research project was designed through means of surveys to investigate in detail causes of traffic problems. The survey was conducted and completed in Central Lagos.

A. Traffic Surveys Conducted

1. Traffic count on recognized congested routes

Reason

(a) To find out if capacity is exceeded

(b) The cause of delay on major routes

(c) To establish improvement in the network since the development of the Ring Road.

Method

Streets in specific land use zones were selected for the survey. Particular attention was focussed on streets previously noted for low speeds before the Ring Road development in order to establish improvement in the total network.

B. Intersection Survey

1. Major intersection points.

(a) To establish cause of delay at junctions.

(b) To find out type of control

Method

Intersections which are likely to cause congestion on the entire route if undue delay occurs were selected for the survey.

C. Pedestrian Volume Count

In commercial area

Reason

1. To establish extent of pedestrian interference with traffic in terms of

   (a) Pedestrian vehicular conflict.

   (b) Pedestrian safety.

Method

Streets identified for high pedestrian volume were selected for the purpose. The times, pedestrian interfered with traffic flow were recorded.

D. Inventory of Parking

Central area supply and demand.

Reason

(a) To establish the extent to which the supply of parking meets demand.

(b) To compare supply before the Ring Road development with the actual supply now.

Method

The total parking available were investigated. The number is therefore compared with the supply before Ring Road development. Actual stock of demand from 1975 were compared with the additional parking supply for 1981.

E. Observed Parking Usage

Reason

(a) To determine parking habit.

(b) To observe level of usage.

Method

Three Land Use sites were selected:

(a) Commercial

(b) Business

(c) Institutional

This is to represent the three broad Land Uses in Central Lagos. This same area coincide with the sites surveyed before the Ring Road Development. Comparative analysis was made.

F. Parkers Characteristic

At sites selected in 4.

Reason

(a) To observe reason for parking.

(b) To establish the duration for parking.

(c) To link purpose and duration with Land Use Zone.

(d) To base supply and demand for parking on the use of parking lots.

G. Land Use Survey

1. To determine change in Land Use since the construction of the Ring Road.
2. To identify uses of major influence.
3. To identify non-confgrming uses in particular corridors.
4. To identify Federal/State/Local Governments offices.
5. To identify large buildings with possible parking problems.
6. To identify new projects and functions in specific corridors.

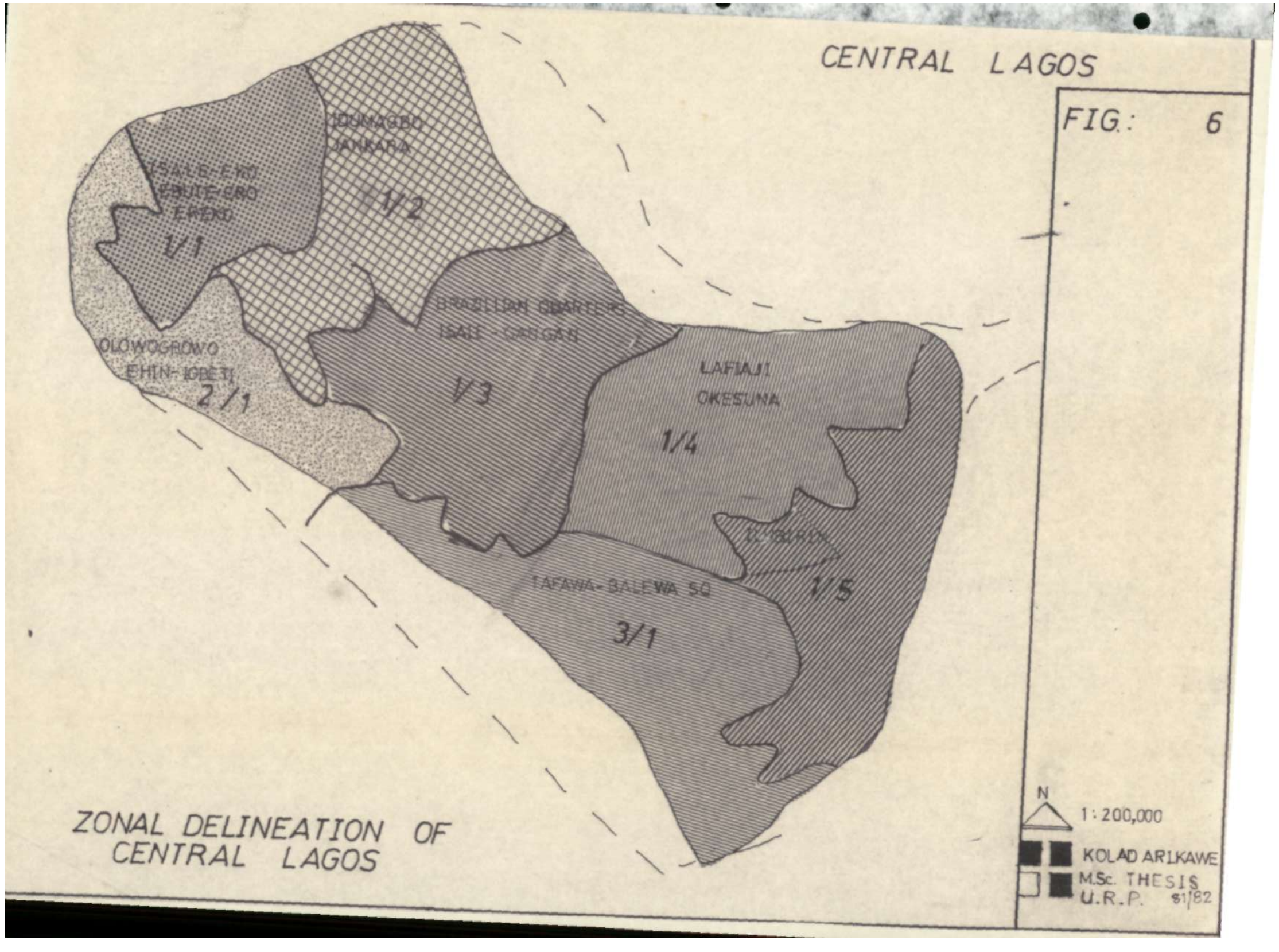
Method

(a) To record changes in Land Uses. The study area was delineated into zonal units as shown on Fig.6. Based on the available data on uses before the construction of the Ring Road, Field observation in addition to the relevant data on existing use, changes in Land Uses were recorded for each zone.

(b) Block by block survey was done to identify items 2 - 6.

(c) Major Land Use categories used are:

1. Residential
2. Business/Commercial


CENTRAL LAGOS
FIG: 6
ISALE-EKO
EBUTE-ERO
EREKO
1/1
IDUMAGBO
JANKARA
1/2
BRAZILIAN QUARTERS
ISALE - GANGAN
1/3
OLOWOGBOWO
EHIN-IGBETI
2/1
LAFIAJI
OKESUNA
1/4
TAFAWA-BALEWA SQ
3/1
1/5
ZONAL DELINEATION OF
CENTRAL LAGOS
N
1:200,000
KOLADE ARIKAWE
M.Sc. THESIS
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3. Traditional Markets
4. Institutions
5. Transportation
6. Undeveloped Land
7. Total built up area

1. Residential:

Include all residential functions and small commercial activities from them

2. Business/Commercial:

Include private administration such as Financial Insurance, Institutions, Wholesale, Retail, Modern and informal sector.

3. Traditional Markets:

Include informal traditional markets.

4. Institutions:

Comprise all public offices.

5. Transportation:

Include all major routes streets and express ways.

6. Undeveloped Land:

Vacant developable Land.

1.27 Method of Presentation

Information collected were processed in four stages.

1st Stage:

Covers the quantitative analysis of the physical characteristic and operational aspects of roads, before and after the Ring Road development.

2nd Stage:

Covers the quality of movement comprising of observed capacity constraints and deficiencies of the network in relation to the Land Use pattern in the area.

3rd Stage:

Quantitative Land Use before and after the development of the Ring Road to determine the extent of encroachment.

4th Stage:

Buildings and functions classified and the problem of traffic generated.

1.41 LITERATURE REVIEW

1.41 Work by Alker Tripp

The first thought about finding solution to traffic problem in Central Area could be attributed to Alker Tripp, who in 1936 proposed "a motorless zone" for the central area. Tripp advocated for a rigidly carved out central area, where vehicular traffic is probibited and pedestrian movement is maximized. He however made exceptions for cyclists, emergency and delivery vehicles.

This advancement was in recognition of the capability of the central area to generate traffic. His exceptions are only for deliveries to commercial shops while emergencies such as fire could be helped immediately without any constraints.

In spite of these reasons, Trip's theory for handling traffic was criticized because:

1. Exclusive right given to certain vehicles could be misused.
2. Land Use ability to generate and attract traffic could even be hampered and loose both capabilities if people are not able to move around fast enough. The area might loose custom to other areas.

1.42 Work by HMSO Steering Committee

This work entitled. "Ring Roads" was based on a 1946 research work in London. The object of the research was to fill the gaps in Tripp's concept It was however concluded that the best way to solve traffic problem in a central area was to have three Ring Roads comprising of outer intermediate and Inner Ring Roads.

The Outer and Intermediate Ring Roads should solely be for the purpose of deflecting traffic from the arterials going into the central area, while approach traffic should only have access to different Land Uses from the Inner Ring Road.

However, the committee stressed the importance of Land Use Policy in achieving the smooth flow of traffic by concluding that frontage developments should be strictly controlled and should not be permitted at all. They recommended the use of under-passes for pedestrians to limit their interference with traffic.

1.43 Work by Thomas Sharp

The concept of Ring Road proposed by the steering committee was however criticized by Thomas Sharp and he proposed the concept of Relief Roads.

Sharp stressed the need for a Relief Road to relieve the main arterials of the presure imposed on it. The proposed Relief Road is to be placed close to the main arterial and car parks located close to the Relief Road.

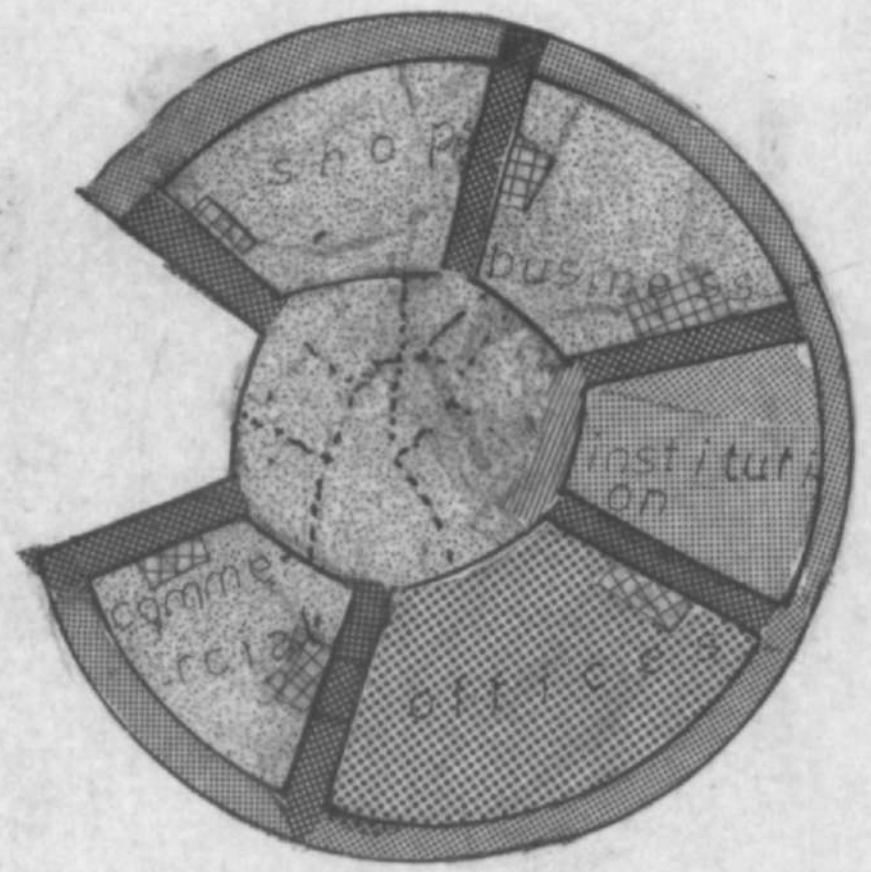
The concept of the Relief Road was however not well accepted and was criticized by other theorists.

1.44 Work by Frederick Gibberd

Gibberd modified Alker Tripp's concept by stressing the need for organizing Land Uses in the central area. He further suggested that Ring Roads should be built round the central area and terminal facilities provided at each Land Use Zone. Having Homogenueous Land Use Zones, limits the amount of criss cross movements as common with the jumble arranged land uses.

The Ring Roads are therefore built in such a way that entrances are direct to each homogenous land use zone. While exits are from the same zone on to the Ring Road.(See Diagram - 2).

This strategy received wide approval expecially from Land Use planners who know the effect of Land Use arrangement on traffic.



arterial
bus stop
car park
pedestrian zone

ARRANGEMENT OF LAND USES AND THE CONCEPT OF THE RING ROAD

DIAG 2

KOLADE-ARIKAWE
M.Sc. U.R.P THESIS
1981/82

1.45

Although, Frederick Gibberd's concept borders very much on precinctual planning, its coming into existence have been criticized heavily for the simple reason that it lacks theoretical or any scientific study of vehicle movement whthin activity areas. But, he is to be given credit for recognizing the importance of organizing Land Uses into homogenous zones connected with car parts and good bus bays.

The formidable task one could envisage is what Land Uses to remove from an already established centre. These tasks could be looked at from the point of view of the problems involved in

1. Removing discordant uses to get homogenous zone
2. Contriving traffic terminals without destroying properties.
3. The provision of underpasses for pedestrians and at what location.

It was in recognition of these prolems that Rapskin and Mitshel (1979) recommended that journeys in central areas should be grouped as follows:

1. Radial Journeys.
2. Cross Journeys.
3. Scatter Journeys.
4. Through Journeys.

He then proceed to recommend that:

1. Radial journeys should be put on Ring Roads.
2. Cross journeys could be put on Ring Roads.
3. Scatter journey to make use of one way streets.
4. Through traffic could also be put on the Ring Road.

Since Gibberd's concept also proposed arrangement of Land Uses in a homogenous zone, it is possible to handle this aspect by:

1. Identifying areas experiencing intense development with attracting and generating capacities.
2. Classifying and grouping them according to their respective potentials.

1.50 Work by A. Adefolalu

Other works done here in Nigeria include that of A. A. Adefolalu, 1980 - who proposed the use of physical improvement in conjunction with strict traffic control in order to solve traffic problem especially for Lagos. He is convinced that other methods would not work, but road improvement and changes in network system would help change the traffic problem situation.

1.51 Work by J. Adenle

In contrast to the belief of Adefolalu, Adenle (1979/1981) believed that no physical improvement means can change the situation of traffic in Lagos and advocated for mass transit. On this he has done a lot of work and he is equally convinced that when the proposed metroline for Lagos come into operation in 1985 vehicle owners will be attracted to the services and the congestion that so characterize Central Lagos would be a thing of the past.

1.52 Work by O. Ojomu[7]

Ojomu in his study of journey to work problems in Lagos Metropolis, concentrated on the problems of traffic on the Island and concluded that the best way to solve the problem is to:

1. Introduce work mens trains.
2. Stagger work hours.
3. Decentralize functions.

1.53 EVALUATION OF NIGERIAN CONCEPT

The various works done here in Nigeria however recognized the need to solve the problem of traffic.

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7. O. Ojomu: Journey to work in Metropolitan Lagos Unpublished M.Sc. Thesis, Department of Urban and Regional Planning, 1973.

once and for all in Central Lagos, but the approaches are different. However, the views expressed about the situation are consistent in general.

It is hoped that the contribution of this research study in terms of trully looking at the problems created by Land Use pattern and in combination with other works could introduce another dimension to finding a solution to the long outstanding problems of traffic in Central Lagos.

CHAPTER - TWO

ANALYSIS AND REVIEW OF EXISTING SITUATION

2.10. INTRODUCTION OF METROPOLITAN LAGOS

2.11 Activity Centres

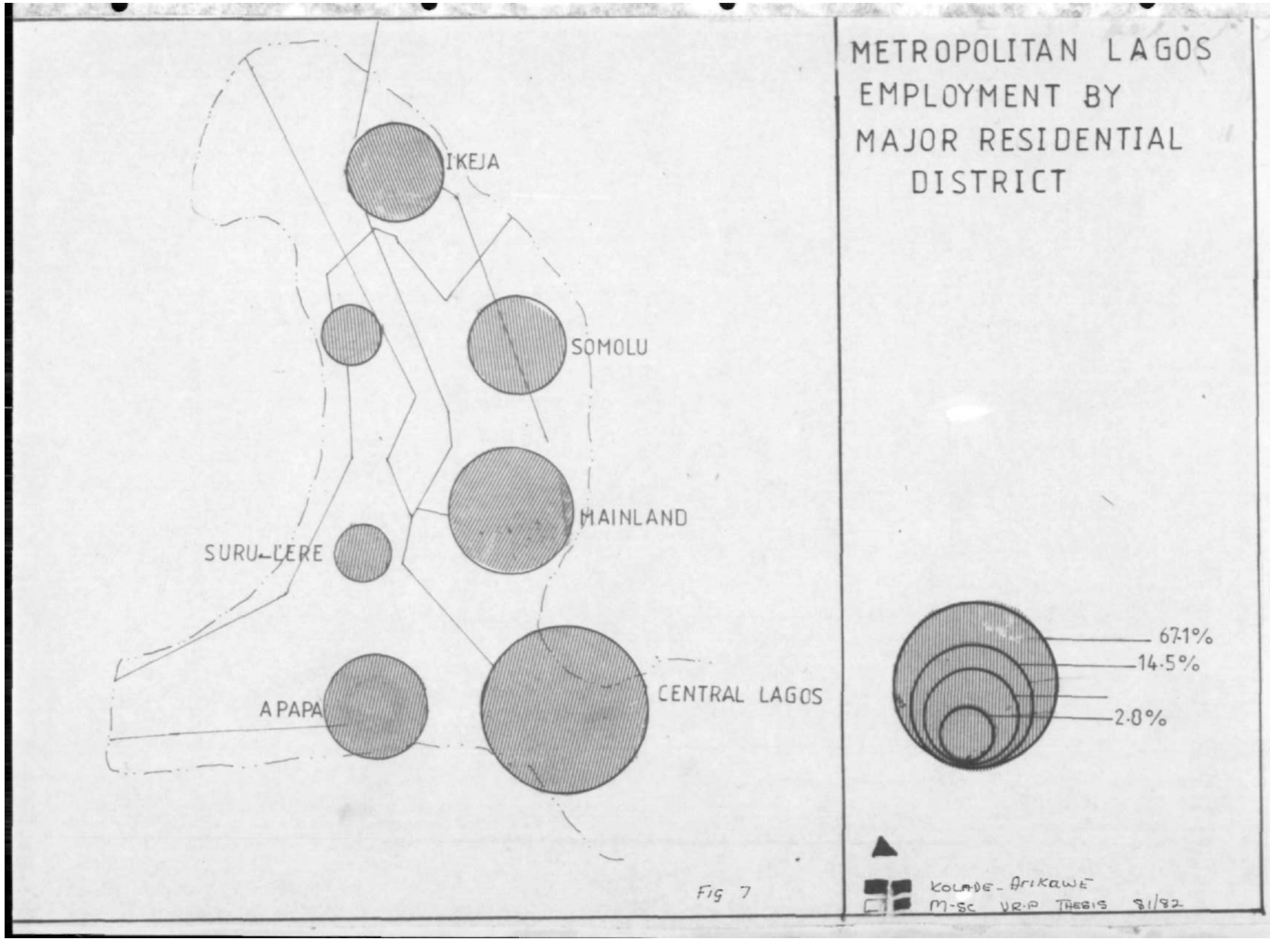
The non-residential areas defined in general terms and shown on Fig.7 incorporate a wide variety of uses which are the Focii of much of the activity in Metropolitan Lagos. These centres of activity are both major employment centres and areas from which services eminate. They strongly influence the pattern and intensity of movement by all modes of travel as well as affecting the function and interelationship of the residential communities.

APAPA: The part complex employs about 16,000 dock workers[1] and a large part of the 26,000 employees of the Nigerian Ports Authority are employed in the area. This area in general account for about 13.3% of the total metropolitan area employment.

LAGOS ISLAND: The Island exhibits a complex development pattern which embraces the Central Business District, one of the largest Traditional Markets and major administrative establishment. It accounts for about 2% of the total metropolitan built-up area. It is the focus of the metropolitan area because of these several functions many of which

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1. Nigerian Ports Authority, Monthly Performance Review, M.P.A. Management Service Department, Lagos, December, 1978.


METROPOLITAN LAGOS
EMPLOYMENT BY
MAJOR RESIDENTIAL
DISTRICT
IKEJA
SOMOLU
MAINLAND
SURU-LERE
APAPA
CENTRAL LAGOS
67.1%
14.5%
2.8%
KOLADE-ARIKAWE
M-SC UR-P THESIS 81/82
Fig 7

are both national and regional in their scope. More than 67% is employed here, about 35,000.[8] This exceeds the labour force resident on the Island, resulting in a high load of commuting from all parts of the Metro. The Island is therefore the focal point of the Transport System.

IKEJA: Employs about 35,000 workers.

MUSHIN - 20,000 are employed in the area.

MAINLAND - Employs about 250,000

SHOMOLU - Employs about 34,000 workers.

TABLE - 2

POPULATION AND EMPLOYMENT DISTRIBUTION

C E N T R E	POPULATION 1976	EMPLOYED %
Lagos Island Central Lagos	432,900	350,000
Lagos Mainland	410,300	250,000
Mushin	967,000	20,000
Ikeja	432,900	35,000
Shomolu	460,300	34,000
Apapa	480,000	16,000

Source: Compiled from G.L.U.S. Lagos State Master Plan - 1976.

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8. Fapohunda, O. J., Workers of Lagos - Paper presented in M.I.S.E.R., Ibadan, November, 1975.

TABLE - 3

EMPLOYMENT BY RESIDENTIAL AREA

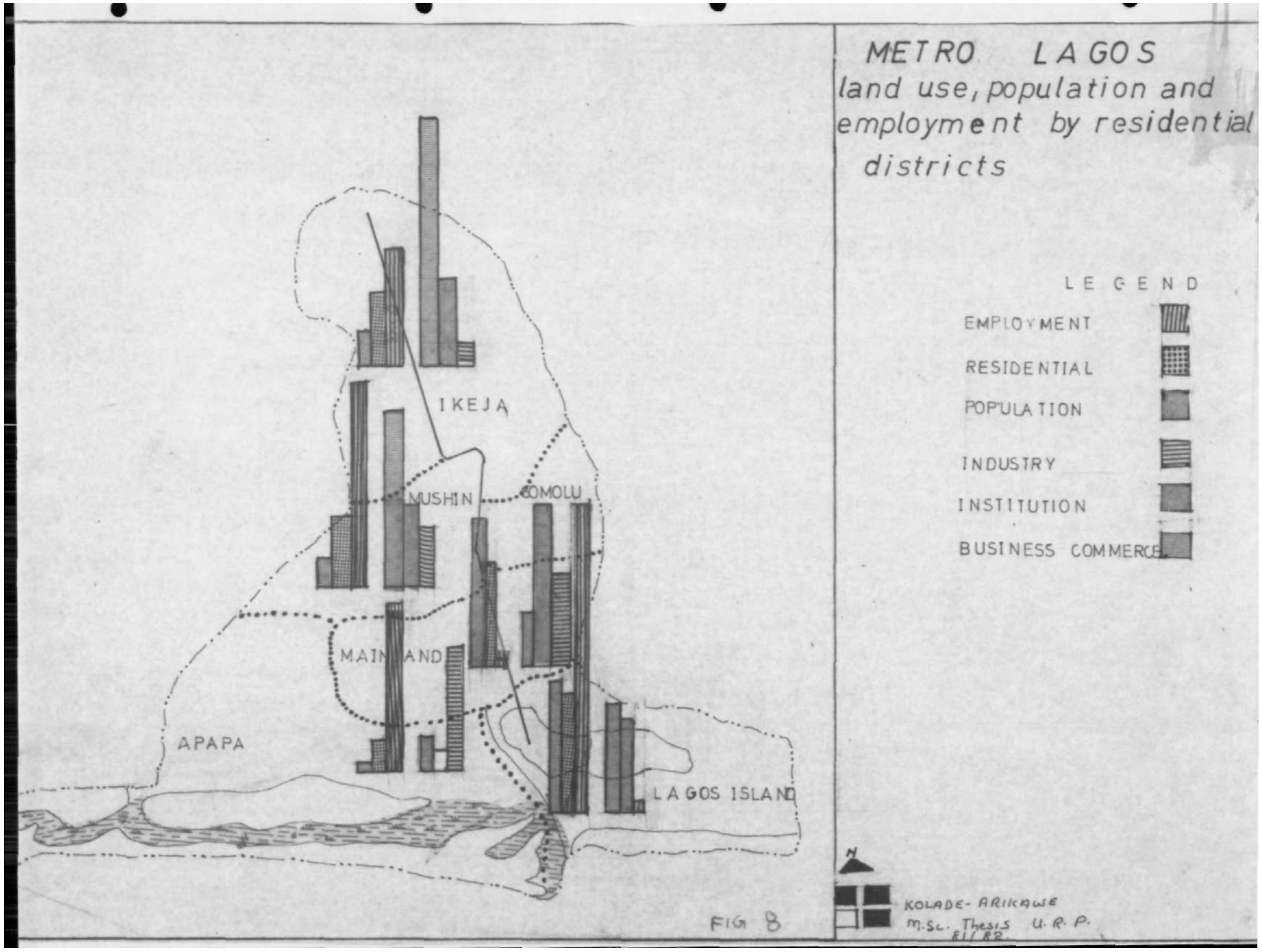
RESIDENTIAL AREAS	TOTAL EMPLOYED %	EMPLOYED IN LAGOS ISLAND	EMPLOYED IN OTHER AREAS
Lagos Island	33.7	60.2	39.8
Ikeja	11.8	27.1	72.9
Mainland	18.4	34.4	65.6
Apapa	13.3	26.6	73.4
Mushin	7.5	19.9	80.1
Somolu	2.3	23.2	76.8

Source: Compiled from O. J. Fapohunda et al;
Lagos Urban Development and Employment.
P. L. O., General - 1978.

Table - 2 gives the total employed in the major activity centre from among the population resident in the area, while Fig.8 show the distribution of Land Uses, population and total employed.

2.12 Residential Area and the Journey to Work

A house-hold survey carried out in 1972 by the Human Resources Unit of the University of Lagos Identified places of work and residence, together with the made of travel of 2,174 employed person in the Metropolitan (Table 3) relate residential and work areas of the employed persons. Individually these


METRO LAGOS
land use, population and employment by residential districts
LEGEND
EMPLOYMENT
RESIDENTIAL
POPULATION
INDUSTRY
INSTITUTION
BUSINESS COMMERCE
IKEJA
MUSHIN
SOMOLU
MAINLAND
APAPA
LAGOS ISLAND
N
KOLADE-ARIKAWE
M.Sc. Thesis U.R.P.
81/82.
FIG 8

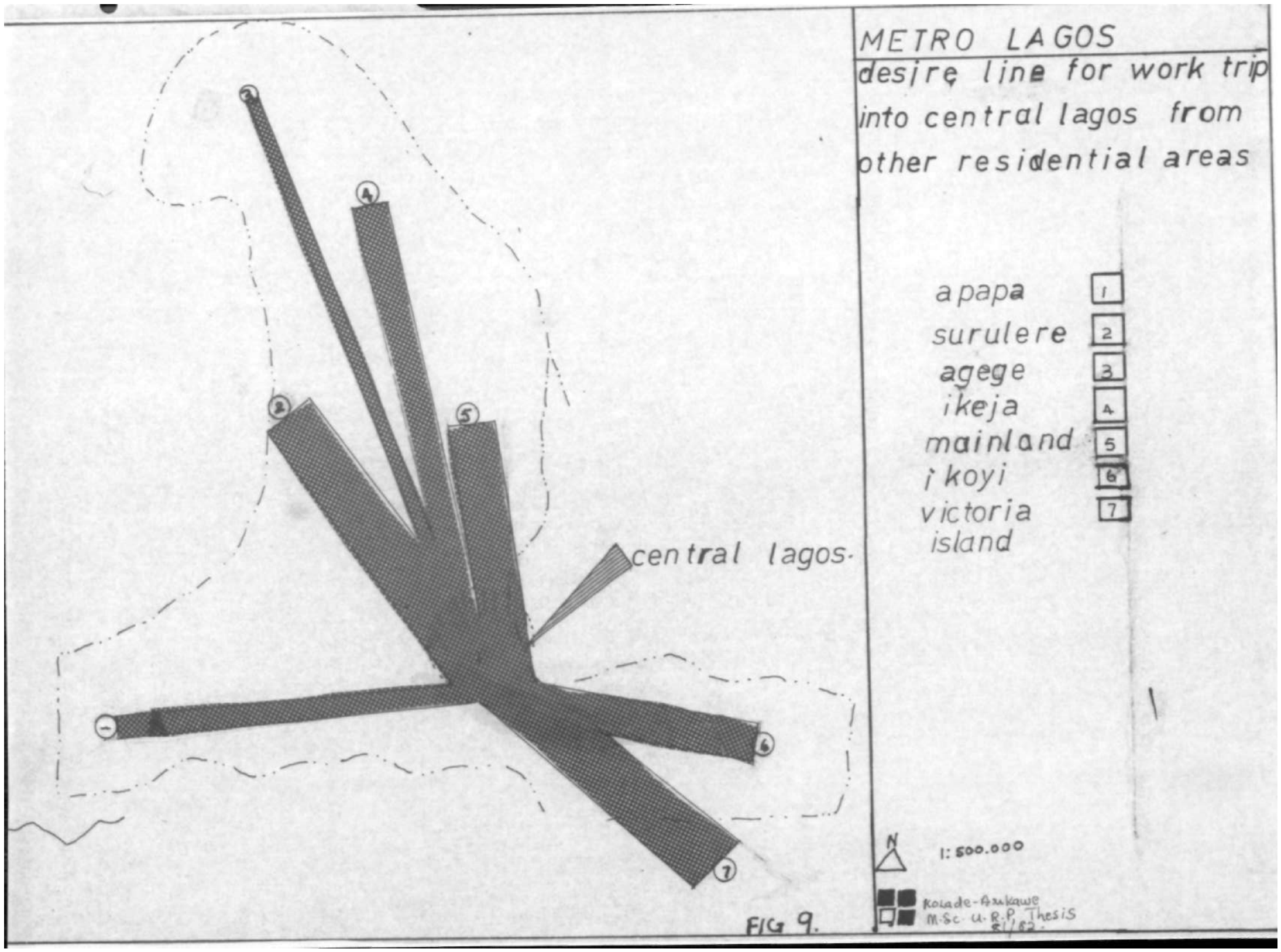
areas account for 10.5 - 28.2 per cent of the total employment with Lagos Island having the greatest concentration far rather obvious reasons. Apapa area also ranked high while Ikeja came next. Fig.9 shows the desire line for trips to and from Lagos Island.

2.13 Mode of Transport

The mode of transport is shown in Figure 10 The interview data revealed 54.2% of the journey to work are made on Public Transport, 18.5% by car, 7.5% by Cycle and 17.9% by foot.

2.14 I n f e r e n c e s

Because of great dependence on Central Lagos for employment, Daily movement begins as early as 5.00am. involving thousands of pedestrians, buses and cars, these movements are centripetal in the mornings and centrifugal in the evenings. Between these periods traffic problem is most aggravated as many people find their ways to their respective destination at once.


METRO LAGOS
desire line for work trip into central lagos from other residential areas
apapa 1
surulere 2
agege 3
ikeja 4
mainland 5
ikoyi 6
victoria island 7
central lagos.
1:500.000
Kolade-Arikawe
M.Sc U.R.P Thesis
81/82.
FIG 9.

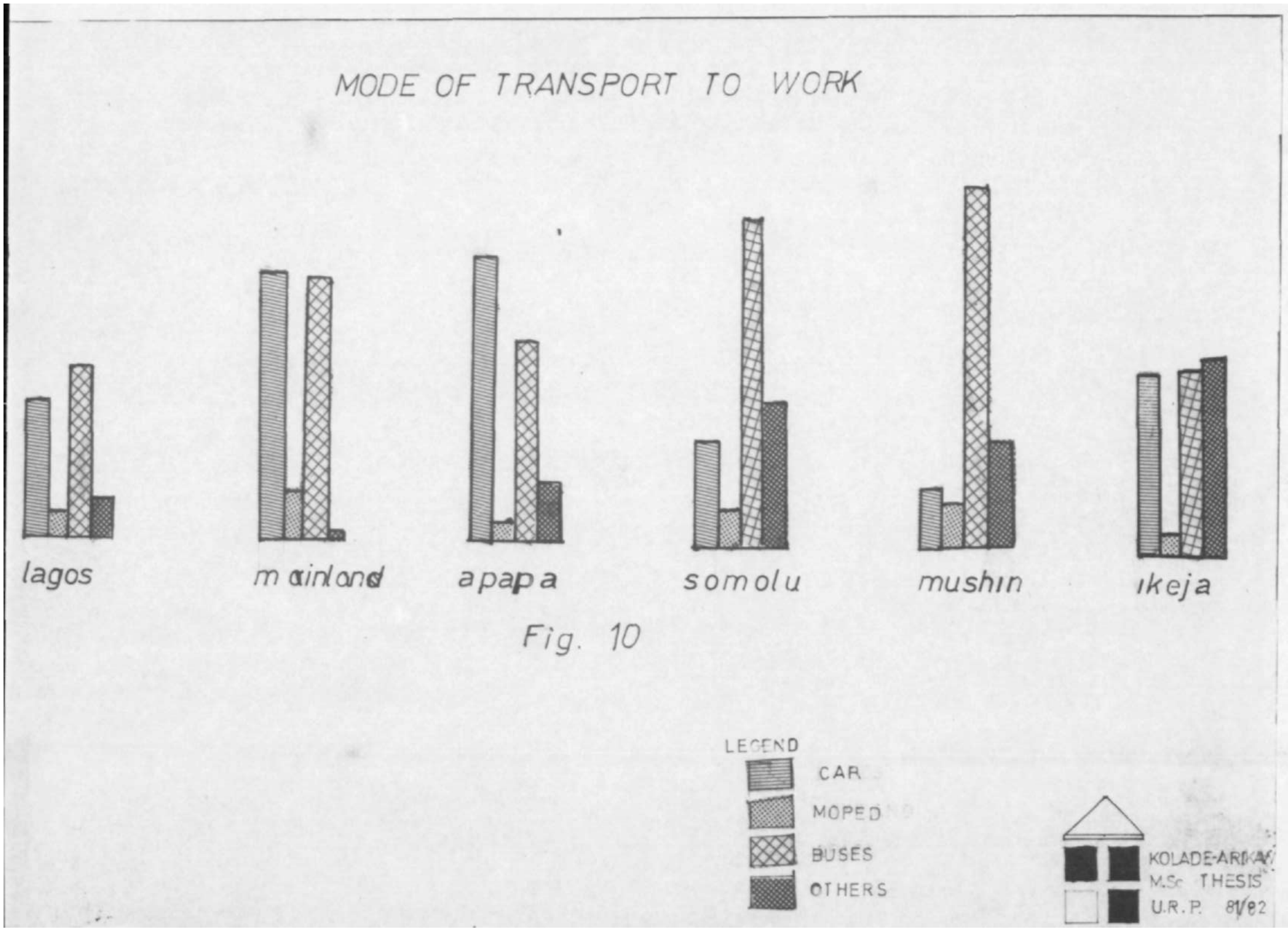

MODE OF TRANSPORT TO WORK
lagos
mainland
apapa
somolu
mushin
ikeja
LEGEND
CAR
MOPED
BUSES
OTHERS
KOLADE-ARIKAWE
M.Sc THESIS
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Fig. 10

2.20 ANALYSIS OF SURVEY DATA AND INFERENCES ESTABLISHING TRAFFIC PROBLEM IN CENTRAL LAGOS

2.21 Survey of Arterials and Collectors

Result of survey of arterial and collector roads showed that the system in most cases have reduced speed not because they are over-loaded, but because of other factors as

(a) Illegal Parking

(b) Loading and unloading of bus passengers

(c) Heavy pedestrian flows

(d) Frontage development

(e) Street trading

The causes of delay on major streets are presented in Table - 4 comparing the result of this survey with the available data for 1975. It was established and shown in Figures 11 and 12 that some major routes on the Island showed remarkable difference in speed than was the situation in 1975. Table 5, surmarizes the finding on the streets. The theoretical capacities of these streets based on the lane widths were compared with the observed volume found on them. The speed and their capacities presented along with 1975 findings in order to establish the improvements on the network.

TABLE - 4

SOME CAUSES OF TRAFFIC DELAY OBSERVED IN CENTRAL LAGOS ON THE MAJOR ROUTES CONNECTING THE RING ROAD

R O A D S	SPOT OBSERVATION ON CAPACITY CONSTRAINTS	L O C A T I O N
APONGBON	Frontage Development and narrow roadway.	South of Ereko Bridge and Ring Road Intersection.
BALOGUN	Heavy Pedestrian Activities, Angle Parking, Diminishing road space, Heavy Bus Route.	South of Ereko connecting Ring Road.
EREKO	Loading and Unloading of Buses and Heavy Pedestrian Activities. Illegal Parking.	South of Nnamidi-Azikwe connecting the Ring Road.
MARTINS	Major Bus Routes, side walk merchants. Heavy Pedestrian flow.	South of Ereko.
NNAMDI-AZIKWE	Two or Three buses stopping abreast side walk merchants. Heavy Pedestrian Flow.	West of Tinubu Square.
ODUNLAMI	Heavy Pedestrian Activity at intersection. Major Bus Route, Parking conflict. Intersection delay with Yakubu Gowom.	Major North South connection to the Ring Road.
IGBOSERE	Illegal parking, Street trading major bus route	Between cable and Odunlami.
MARINA	Buses Turning into Marina from Balogun Street. Loading and Unloading of Bus Passengers Heavy Pedestrian activity from Bus-Stops.	East of Balogun.

It is assumed here that any major improvement in traffic flow or deteoration in the condition of traffic is attributed to:

1. Intensity and type of development along its corridor.
2. The effect of the Ring Road development.

From the two tables (4 and 5) presented, it could be infered that:

1. Improved speed occured on streets directly linked with the Ring Road hence the Ring Road has helped in improving traffic flow in this particular instance. While increased capacity, due to widening and one way system is also responsible.
2. Delay on streets is due to the type and arrangement of Land Uses as it was evident that
   a. Commercial streets show no improvement in speed over 1975.
   b Areas of mixed Land Uses around the commercial area to the West of the study area fare the worst.

c. Part of the Institutional area mixed with Business and Commercial to the East around Moloney and Sand-grouse Market showed no improvement.

d. All areas close to traditional markets have not improved (Figure 11 present the over-all problem of the study area.

TABLE - 5

BEFORE RING ROAD

S T R E E T	SPEED	DIRECTION 1 or 2 Way	CAPACITY PCu		LANE WIDTH
			E	A	
EREKO	0 - 10	1	2000	3500	2
APONGBON	0 - 10	1	2000	2250	2
MARTINS	10 - 20	1	1000	1975	1
NNAMDI AZIKWE	0 - 10	1	1000	4475	1
ODUNLAMI	0 - 10	1	1000	2931	1
BAMGBOSE	10 - 20	1	1000	2050	1
BALOGUN	10 - 20	1	1000	450	1

E = Theoretical Capacity

A = Actual Volume

AFTER RING ROAD

S T R E E T	SPEED	DIRECTION 1 or 2 Way	CAPACITY PCu Hr.		LANE WIDTH
			E	A	
EREKO	0.- 10	1	2000	3000	2
APONGBON	10 - 20	1	8000	3500	4
MARTINS	0 - 10	1	3000	1000	3
NNAMDI AZIKWE	0 - 10	1	2000	2500	2
ODUNLAMI	0 - 10	1	2000	1000	2
BAMGBOSE	0 - 10	1	3000	1000	2
BALOGUN	0 - 10	1	3000	1500	3

E = Theoretical Capacity

A = Actual Volume

2.22 Peak Period Congestion

This coincide with the rush hours when movement from the different residential districts into the central area is either centripetal or centrifugal. The streets most affected are those stated in table 5.

Intersections surveyed showed delay at the intersections to be worst during Peak Periods and in many cases the situations is aggravated by

1. Lack of control at the intersection.
2. Lack of Road Courtesy.
3. Absence of Road Signs.

The areas where the problems exist is shown in Figure 11.

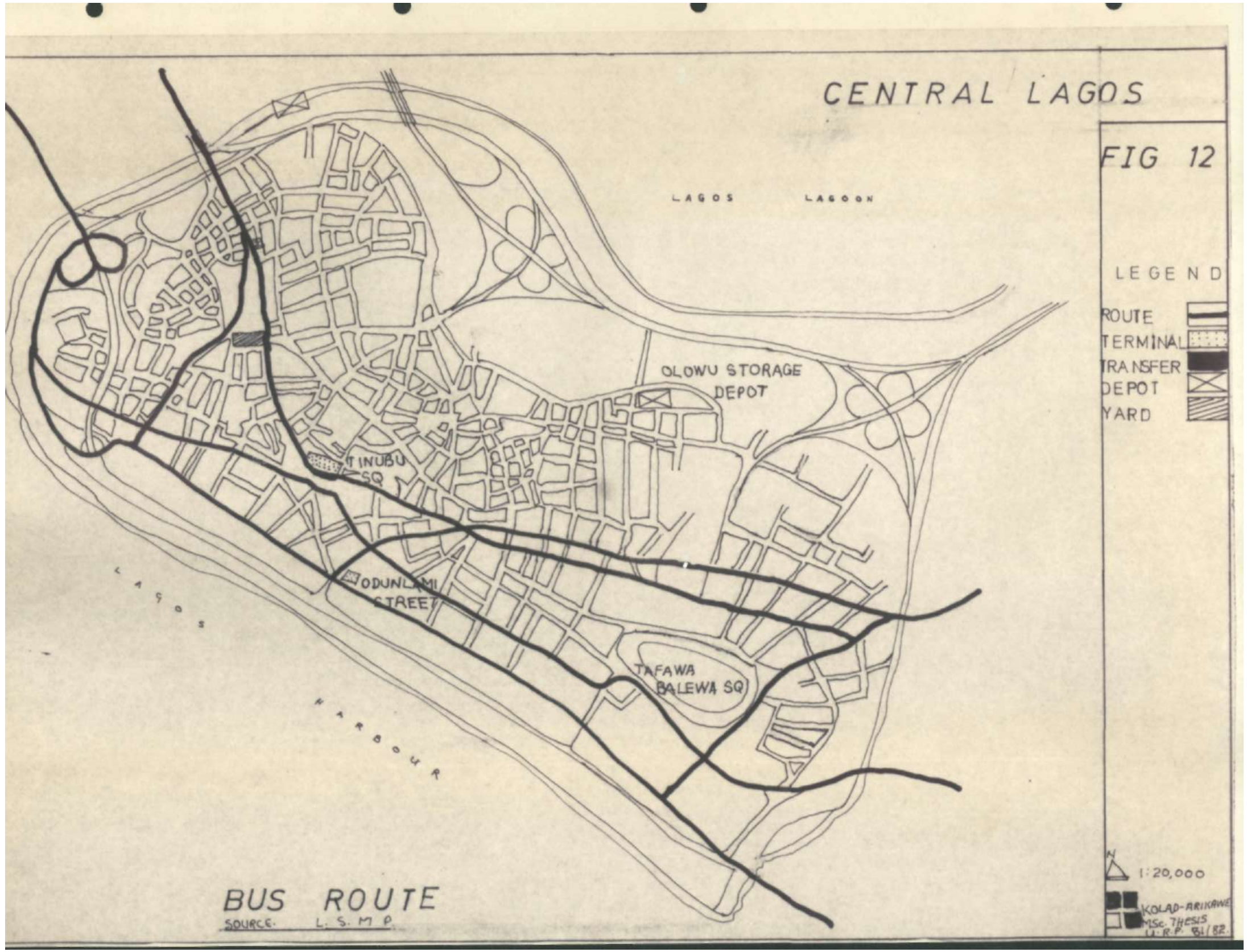
2.23 Bus Operations

The study area suffers from competition with private automobiles which cause traffic congestion and reduction in travel speeds. The difficulty of providing convenient service is due to this factor. The design of some roads force buses to stop on the streets and cause traffic problems.



Plate - 13

ODUNLAMI STREET: Lack of convenient transfer point encourage loading and off-loading on the street.


CENTRAL LAGOS
FIG 12
LAGOS LAGOON
OLOWU STORAGE DEPOT
TINUBU SQ
ODUNLAMI STREET
TAFAWA BALEWA SQ
LAGOS HARBOUR
LEGEND
ROUTE
TERMINAL
TRANSFER
DEPOT
YARD
N
1:20,000
KOLAD-ARIKAWE
MSc. THESIS
U.R.P. 81/82.
BUS ROUTE
SOURCE. L.S.M.P.

Convenient access to transfer points and terminals encourage loading and off-loading of passengers on the streets. Odunlami Street is a good example of this problem shown in Plate - 13. Bus terminals are poorly designed. From the survey of bus-stops, out of the 26 bus-stops surveyed 10 bus-stops have no bus bays. Figure 12 shows the bus routes and terminal transfer in the area. It was also observed that some bus Bays are poorly designed and not conducive to easy entry and exit. Due to intense competition for passengers, driving practices tend to be very aggressive and dangerous and often at the expense of other motorists.

2.24 Pedestrian Volume

Information on Pedestrian interference with traffic flow was collected at one location and the survey revealed considerable delay to vehicles by pedestrians. Survey conducted North of Ereko near Carter Bridge revealed within 2½hours, traffic was stopped 26 times and approximately 5000 people crossed on the road.

It was also found that Pedestrian bridge provided North of the surveyed area was under used as 3000 pedestrian crossed within the same time period. It could be infered from the survey that the Bridge is not properly sited.

Other observations on causes of Pedestrian interference include.

1. Lack of adequate sidewalks.
2. Sidewalks used for parking.
3. Sidewalks used for street trading
4. Near parking lot
5. Commercial area.

Location of areas with heavy pedestrian flow is shown on Figure 11. These routes are often reduced by at least One lane width when the problem is acute.

Observation of pedestrian facilities showed that they were not adequate. Zebra crossings were not respected in most instances.

2.25 Parking Survey

1. Inventory of Parking

Due to the construction of Ring Road, 5,340 parking spaces were provided on reclaimed land between Marina and Ring Road (Table 6) shows the distribution of the parking spaces and the number of spaces in each lot. See Plate 14.

TABLE - 6

PARKING SPACES IN LOTS BETWEEN MARINA AND RING ROAD - 1981

Parking Lot	Use	Parking Spaces Provided
A	Public	907
B	Public	161
C	Public	553
D	Defence	146
E	Defence	45
F	Defence	180
G	Public	247
H	Taxi	102
I	Public	81
J	Public	148
K	Public	400
L	Public	800
M	Public	689
N	Public	472
O	Private	220
P	Public	188

Public Parking Spaces	=	4646
Federal Ministry of Defence	=	371
Private	=	220
T O T A L	=	5340

2. From the available data before the construction of the Ring Road, it was estimated that a total of 6,582 spaces are scattered all over the study area as shown in Figure 13.

3. Re-development of Tafawa Balewa square added to the supply of parking by an additional 800 spaces.

4. Building requirement for new high rise building in central Lagos request proprietors to provide parking for at least 10% of their employees. This regulation have added to the supply of parking by an additional 1,068 spaces in large buildings.

5. Additional 300 spaces are provided at metered location in the central area. Most of these are located in the commercial district. (See Plate 15)

TABLE - 7

L O C A T I O N	Number of Spaces/Metres
BALOGUN	120
MARTINS	87
ISSA WILLIAMS	75
APONGBON	38
T O T A L	300

The distribution of metres in location

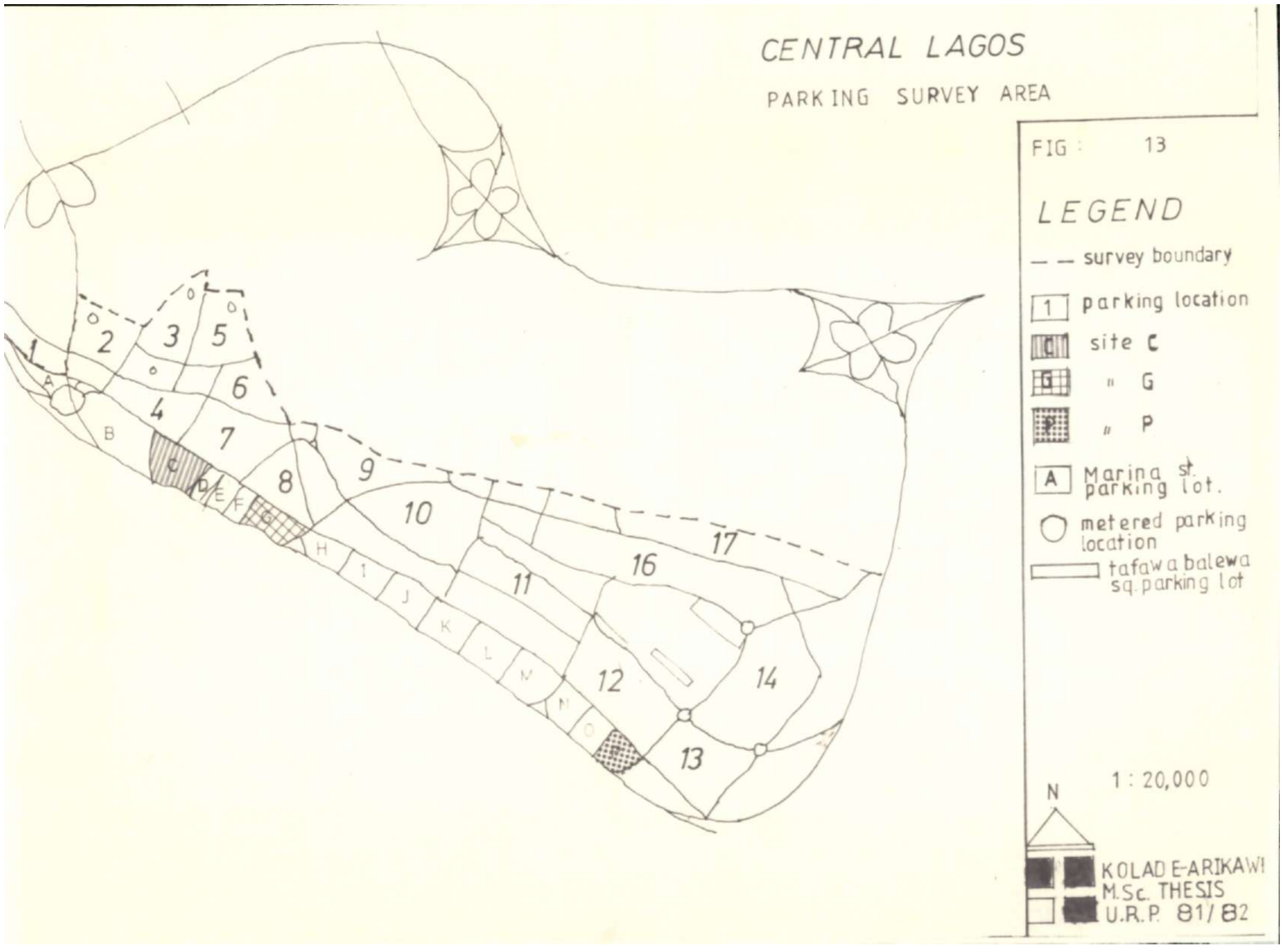

CENTRAL LAGOS
PARKING SURVEY AREA
FIG : 13
LEGEND
survey boundary
parking location
site C
" G
" P
Marina st. parking lot.
metered parking location
tafawa balewa sq. parking lot
1 : 20,000
N
KOLADE-ARIKAWE
M.Sc. THESIS
U.R.P. 81/82
1
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Plate - 15

TYPICAL METRED PARKING LOCATION



Plate - 14

The long strip of fenced parking spaces on the right constructed on re-claimed land during Ring Road development total of 5,340 spaces.

6. Parking Demand and Supply

Demand for parking in 1975 before the construction of the Ring Road was 11,913 and supply was 6,582. Total deficit is 5,331.

Most of these parking spaces were formerly provided along the kerb with occassional off street parking lots.

Existing Parking supply is 7,508 + 6,582 = 14,090.

At least it could be infered that the demand for parking carried over from 1975 has been met.

2 Observed Parking Space Usage

Although parking regulations prohibit parking of vehicles on all major streets in the study area, Parking of vehicles on sidewalks and around street corners continued. An inventory of parking space usage conducted in 1979 by the Master Plan Project Unit of Lagos State Planning Division revealed that out of the total 7,667 parked vehicles, 23.5% were illegally parked or in undesirable locations as outlined in table 8.

Areas in the commercial district which are much more utilized coincide with:

TABLE - 8

PARKING ACCUMULATION

Lagos Island Central Business District

Zone	PARKING SPACES					
	Legal		Illegal & Undesurable		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
1	397	91.7	36	8.3	433	100.0
2	332	87.1	49	12.9	381	100.0
3	144	75.8	46	24.2	190	100.0
4	36	73.5	13	26.5	49	100.0
5	356	96.5	13	3.5	369	100.0
6	147	50.0	147	50.0	294	100.0
7	379	87.5	54	12.5	433	100.0
8	244	50.9	235	49.1	479	100.0
9	117	51.1	112	48.9	229	100.0
10	183	68.0	86	32.0	269	100.0
11	66	27.7	172	72.3	238	100.0
12	84	28.4	212	71.6	296	100.0
13	247	70.4	104	29.6	351	100.0
14	194	59.9	130	40.1	324	100.0
15	549	79.2	144	20.8	693	100.0
16	497	68.6	228	31.4	725	100.0
17	195	91.5	18	8.5	213	100.0
A	422	100.0	-	-	422	100.0
B	221	100.0	-	-	221	100.0
C	334	100.0	-	-	334	100.0
G	357	100.0	-	-	357	100.0
I	38	100.0	-	-	38	100.0
J	78	100.0	-	-	78	100.0
K	75	100.0	-	-	75	100.0
L	0	100.0	-	-	0	100.0
M	15	100.0	-	-	15	100.0
N	91	100.0	-	-	91	100.0
P	70	100.0	-	-	70	100.0
TOTAL	5,868	76.5	1,799	23.5	7,667	100.0

SOURCE: Wilbur Smith and Associates/MPPU Parking Field Survey, 1979

1. High percentage of illegal and undesirable parkers.
2. Higher parking demand.
3. Inadequate supply of parking.

The result also show that some people park illegally because of the reluctance to walk long distance.

However, when this result was compared with the percentage of illegal and undesirable parkers in 1975, their seemed to be an improvement. 70% of all vehicle parked in 1975 were illegal while only 56% are illegal presently, in the commercial district.

3. Parking characteristics

Sample interviews were conducted at three selected location (parking lot P, C and G) representing the major Land Uses in the study area. This is to establish the general characteristic in similar location. The characteristic vary for the three locations in table - 9. Parking lot C in front of Bhogson Store is shown on Plate - 10

(A) Trip Origin

Approximately 45% of parkers in parking lot P come from Lagos Island. Parkers from Mainland and Ikeja account for 32.4%. At parking



Plate - 10

Parking lot C in-front of BHOJSON Store on Marina Street.

TABLE - 9

SURVEY OF SELECTED PARKING LOTS IN THE LAGOS CENTRAL BUSINESS DISTRICT AND CENTRAL INSTITUTIONAL AREAS

CHARACTERISTIC	LOCATION					
	Parking Lot P TAFAWA BALEWA		Parking Lot C In Front of BHOJSON		Parking Lot G General Post Office	
	Number	%	Number	%	Number	%
Lagos Island	85	45.2	40	18.1	28	14.5
Apapa	15	8.0	26	11.8	16	8.3
Yaba, Ebute-metta, Suru-lere, Mainland	37	19.7	79	35.7	65	33.9
Mushin	2	1.1	9	4.0	10	5.2
Shomolu	11	5.9	11	5.0	23	12.0
Ikeja	24	12.7	24	10.9	30	15.7
Others	14	7.4	32	14.5	29	15.1
TOTAL =	188	100.0	221	100.0	192	100.0
PURPOSE						
Work	63	33.5	117	52.9	98	51.0
Shopping	13	6.9	42	19.0	14	7.3
Personal-Business	106	56.4	59	25.7	78	40.6
Others	6	3.2	3	1.4	2	1.1
WALKING DISTANCE						
50 Yards	110	58.5	57	25.8	41	21.4
50 - 100 Yards	54	28.7	49	22.2	40	20.8
100-200 Yards	9	4.8	57	25.8	41	21.4
200 Yards	15	8.0	58	26.2	70	36.4
DURATION						
1 Hour	79	42.0	62	28.0	41	21.4
1 - 2 Hours	58	30.9	55	24.9	40	20.8
2 - 4 Hours	8	4.3	15	6.8	20	10.4
4 - 6 Hours	13	6.9	8	3.6	18	9.4
6 - 8 Hours	30	15.9	81	36.7	73	38.0

Lot C, parkers from Mainland account for 35.7%. At parking Lot G, parkers from the Mainland account for 33.9%. The large percentage of parkers from Lagos Island comprising of Ikoyi, Victoria Island is attributed to its proximity to the Federal Ministry of Works, Head Offices which attract large no of Civil Servants.

(B) Trip Purpose

This was determined for Work, Shopping, Personal Business and Other categories. The predominant trip purpose for work at site C and Site G account for 53% and 51% respectively. At site P, predominant purpose was business accounting for 56%.

(C) Walking Distance

There is greater willingness to walk longer distance at sites G. and C. The willingness is weighed against the advantage of parking close to the Ring Road.

(D) Parking Duration

42% park under 1 hour at site P while 30% in site C, 10% in site G and 8% in site P were parked for more than 8 hours.

2.26 Land Use Survey

From the survey analysis, it is evident that the Central Business District and Institutional Areas are encroaching on the traditional residential area to the North as shown on the generalized Land Use Map (Figure - 14)

A critical look at the Map (Figure-16) would show that the area in transition is the North of the Central Area. This area if not checked would definitely experience more encroachment and changes in Land Uses. The traditional market is also encroaching on nearby residential area.

It was observed that the encroachment is in form of redevelopment of existing residential buildings into high business and commercial buildings. But some established residential areas like the zones enclosing the Brazillian Quarters, Isale Eko Area are likely to resist change. Zone 1/1 and zone 1/3.

Figure - 15 shows the detailed changes in Land Uses for each zone in Central Lagos.


CENTRAL LAGOS
land use change
RESIDENTIAL
INSTITUTIONAL CHANGE
COMMERCIAL
CHANGE
INSTITUTION
N
1:200,000
KOLASE-ARIKAWE,
URP M.Sc Thesis
1981/82
FIG 14

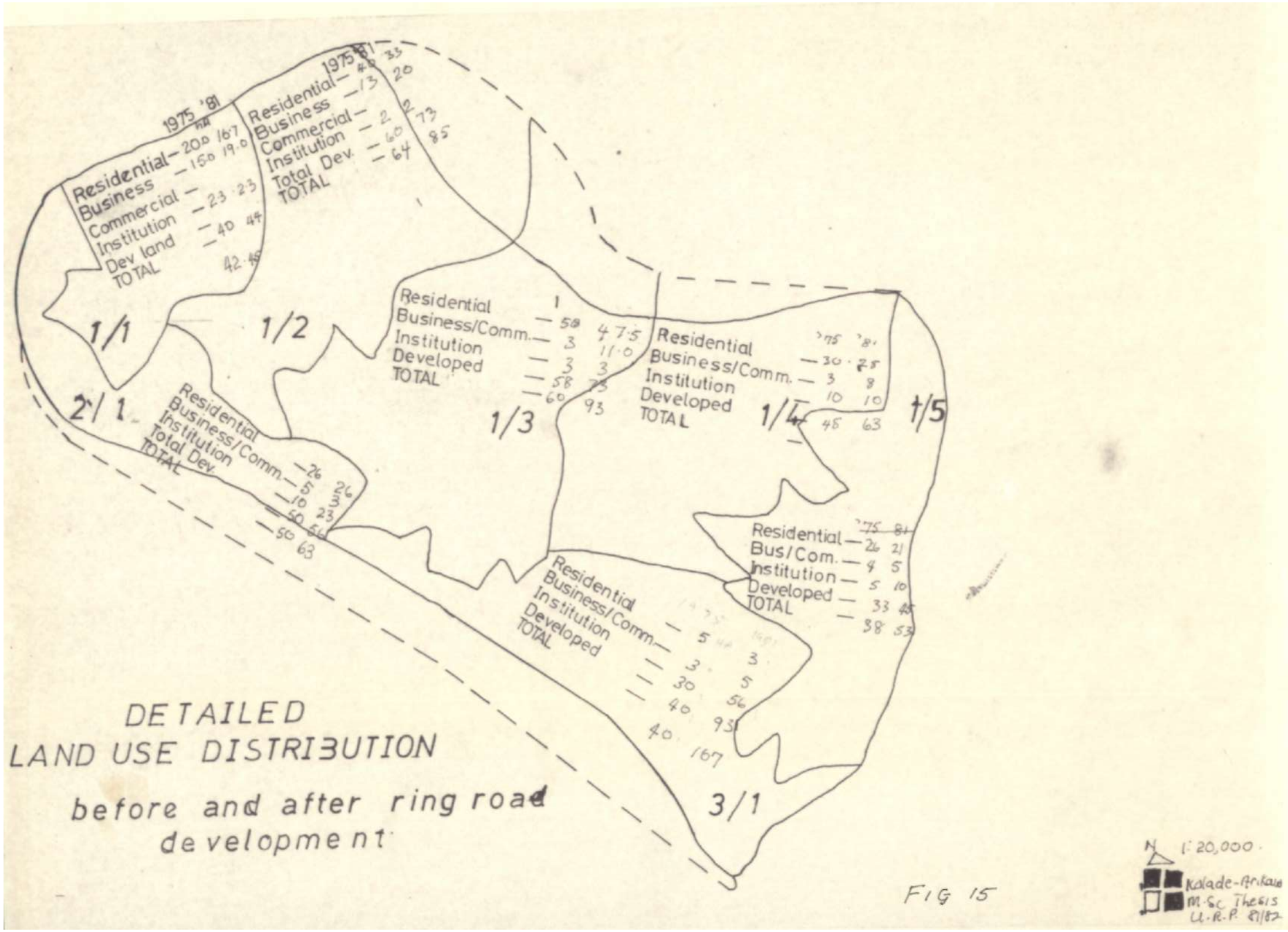

1975 '81
Residential — 200 167
Business — 150 190
Commercial —
Institution — 23 23
Dev land — 40 44
TOTAL 42.5
1/1
1/2
Residential — 13 20
Business — 2 2
Commercial — 60 73
Institution — 64 85
Total Dev.
TOTAL
Residential — 58 47.5
Business/Comm. — 3 11.0
Institution — 3 3
Developed — 58 73
TOTAL 60 93
1/3
Residential — 30 25
Business/Comm. — 3 8
Institution — 10 10
Developed — 45 63
TOTAL
1/4
1/5
2/1
Residential — 26 26
Business/Comm. — 5 3
Institution — 10 23
Total Dev. — 50 51.5
TOTAL 50 63
Residential — 24 21
Bus/Com. — 4 5
Institution — 5 10
Developed — 33 45
TOTAL — 38 53
Residential — 5
Business/Comm. — 3
Institution — 30
Developed — 40
TOTAL 40
3/1
DETAILED
LAND USE DISTRIBUTION
before and after ring road
development
FIG 15
1:20,000
Kolade-Arikawe
M.Sc Thesis
U.R.P. 81/82

TABLE - 10

QUANTITATIVE ANALYSIS OF LAND USE CHANGE
1975 and 1981

U S E S	LAND/ha. BEFORE RING ROAD	LAND/ha. AFTER RING ROAD
Residential	193.00	150.00
Business/Commercial	50.00	85.85
Institutions	62.3	81.00
O t h e r s	29.7	207.15
Total Developed	318.00	447.7
Undeveloped	17.00	86.3
T O T A L	= 335.00	534.00

From the table it could also be observed that many other uses have been intensified. The increase in Land Area from 335 ha. to 534 ha. is due to the reclaimation of Land from the swamp area in the North of Central Lagos and part of the Lagoon for the purpose of the Dolphin Residential Scheme in the North and for the Development of the Ring Road.

2.27 Uses of Major Influence

Uses of major influence in the area are:

1. Commercial
2. Business
3. Institutional

The commercial and Business districts and the Institutional area for purpose of discussion is divided into four functional sub-area; held together by the two key arterials, Marina Road and Broad Street. Almost all external traffic penetrating the area must use either of these two main through fares.

For convenience, Central Lagos has been divided into two (Figure 16 and 19). On each Map, sub-districts are shown for clarity.

CENTRAL BUSINESS DISTRICT

1. Warehouse and Wholesale District

This is located along Marina, curves round to the North from APONGBON STREET. All the functions in this area conform with the general use dominating.

2. Retail District

The second sub-area is the retail district from APONGBON STREET to WILLIAMS STREET and from MARINA to BROAD STREET. It include all the Departmental Stores and specialty shops. The largest and oldest is Kingsway's Stores, followed by Leventis, Chellarams, P.Z., Bhojson's, Bata shops and Travel Agencies.

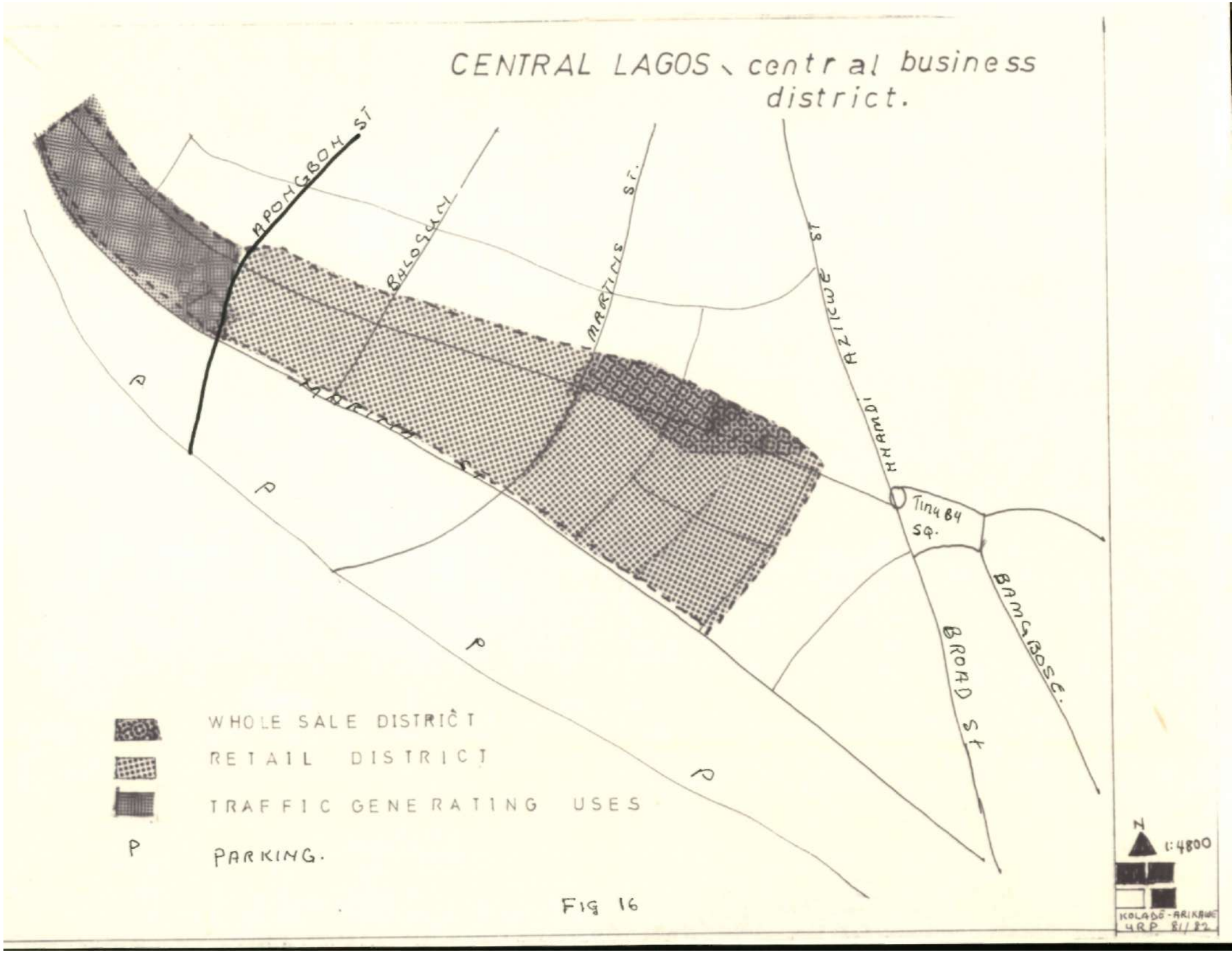

CENTRAL LAGOS - central business district.
APONGBON ST
BALOGUN
MARTINS ST.
AZIZIA ST
MARINA
HARBOUR
Tinubu Sq.
BAMGBOSE.
BROAD ST
P
WHOLE SALE DISTRICT
RETAIL DISTRICT
TRAFFIC GENERATING USES
PARKING.
N
1:4800
KOLADE - ARIKAWE
URP 81/82

Fig 16

Traffic Generating Uses

In the area include the concentration of office blocks N.I.D.B.(18 Storey), Mandilas House (10 Storey) U.B.A. (10 Storey) See Figure 16. These are found along Broad Street, from the corner of Martins Street to Williams.

These buildings are great generaters of traffic and attractors. Their continued existence within this corridor would only aggravate problems of traffic in the area.

However, they cannot be classified as non-fonforming to the general use of the area.

2.27 Central Institutional Area

1. Finance Sub-district

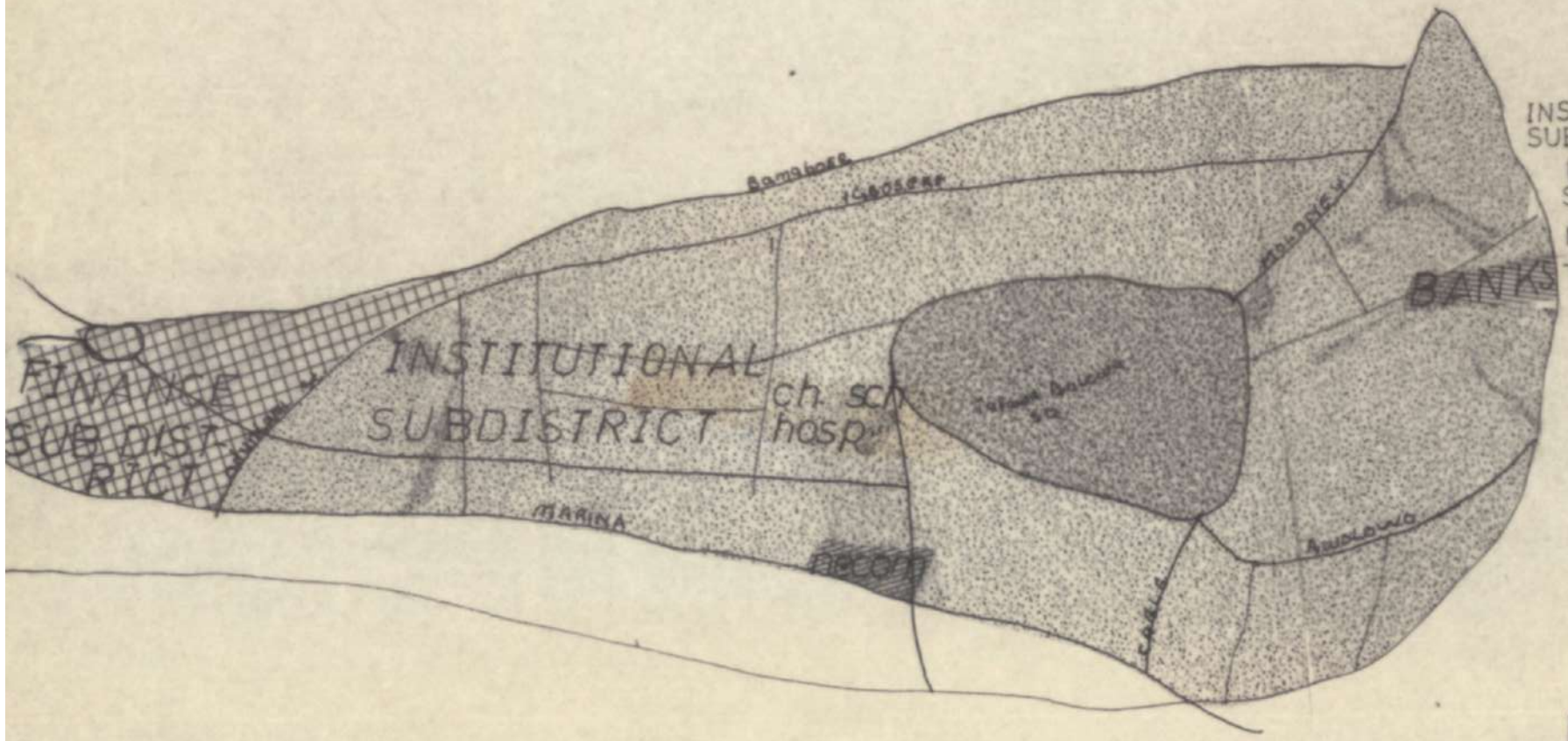
The finance sub-district is located immediately East of the CBD and starts around Odunlami Str. as shown on Figure 17. Here most banks are located as well as several insurance companies. Plate - 17 shows part of the district.

Non-conforming Use

The general post office administrative building in this corridor is not conforming with the generality of the use here. The fact that the building attract traffic with the attending problem of parking will create a lot of traffic

CENTRAL LAGOS

FIG. 17



CENTRAL INSTITUTIONAL AREA

source: field survey Oct. 1981.

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u. r. p. 81/82

problems here. It has been observed from field survey that this, problem exist. However, the building is moving to its new site further East of the Institutional Area in about a year.



Plate - 17

Part of the financial sub-district R.E.A.(Royal Exchange Assurance) is seen in the background.

2. The Institutional Sub-district

This are is the largest. It extends from Odunlami Street East further Island to Igbosere Road as shown in Figure 17. It include Federal,State and Local Government Administration and related agencies. Churches, Schools and Hospitals are also concentrated in the small corridor shown in Figure 17. The Central Library is also here.

Non-conforming Use

The Nigeria External Telecommunications on the corner of cable is 37 storey high was recently completed and located close to the corridor enclosing hospitals, churches and schools. This building will undoubtedly attract a lot of traffic and would inter-fare with the functions of the dominating Land Use in the area. Its continued existence within the corridor will definitely create problems of Traffic as it has no parking facility for its customers.

(8) The commercial Banks located East of the study area enclosed within the predominantly office district would create problems.of traffic if allow to stay within the corridor.

From field observation, parking is a problem around the area, and customers coming into the bank would want to impede traffic movement through illegal and undesirable parking in order to transact business with the banks.

3. Buildings that Would Create Parking Problems

From the survey of uses in the central area, the following non-conforming buildings have been identified as potential areas from which traffic problem would start:

1.	Mandilas House	-	Broad Street/Martins
2.	N. I. D. B. House	-	Broad Street/Martins
3.	U. B. A.	-	Broad Street/Martins
4.	General Post Office	-	Odunlami/Marina Street
5.	M. E. C. O. M. House	-	Marina/Cable Street
6.	First Bank	-	Moloney Street
7.	Union Bank	-	Moloney Street

4. New Projects

There are on going projects in central Lagos at locations which have neither the capacity to carry mere traffic not the area for more expansion. For example, Plate 18, shows a typical high rise structure under construction in a predominantly commercial area. When this building is completed and came into use, the traffic in the corridor would be greater than

what it is now and the problems of traffic would consequently be aggravated.



Plate - 18

New Development that is likely to cause problem of traffic. Note the Departmental Store U.T.C. in the background. The area is purely retail commercial and the new structure will definitely be a misfit in the area when it comes into use.



Plate - 19

Lagos Island Local Government granted permission for the use of this area as market. They have infact divided the area into stalls as seen above. The area is under the Ring Road near Marina. Presently, there are cases of illegal parking which is due to the location of this market.

There are other commitments by the Government which are not in the best interest of traffic. Granting permission for the use of a highly travelled corridor as market (Plate - 19) without giving thoughts to the problem of traffic.

If financial investment is a measure of Federal and State Government commitment of an area to more intensive use, the amount of money spent by the three levels of Government in Central Lagos is an indication of such commitments.

There are various developments going on everywhere on Lagos Island with the Government's backing. There is the New General Post Office around Moloney, the atlantic building in the North of Lagos around Olowogbowo particular target areas are the residential districts. These actions would only help spread the problem of traffic throughout Central Lagos.

An estimate of the investment from 1975 to present is 98.5 Million Naira. From these, we can conclude that the Government, is wasting money and human resources in finding solutions to traffic problems, because it seems they are doing everything they can to get the problem father and farther away from being solved.

6. Conclusion

In the light of all the inferences from the survey analysis, it is obvious that Land Use pattern have more than help create problem of traffic in Central Lagos. However Central Lagos have witnessed series of strategies aimed at solving the problem.

2.30 REVIEW OF STRATEGIES USED FOR SOLVING TRAFFIC PROBLEMS IN CENTRAL LAGOS

Traffic problem in Lagos have a long history the problem have become part of the residents of lagos that they refer to it in the now familiar slang of 'Go Slow'.

However, the three levels of Government that jointly operate in the Central Area have used different strategies to solve the problem, but up till now the problem have defied several solutions.

This section is aimed at reviewing the various strategies used in the process of solving traffic problem in Lagos.

The most commonly used strategy is Route-way improvement. This is embarked upon as soon as it is felt that a particular road is operating beyond capacity. Series of social problems have been created this way because it involves demolition in most cases as buildings have generally been known to be too close to streets, so when expansion is opportuned, there is little or nothing to be done by way of saving them.

However this strategy have in most cases proved useless, because no sooner is the project completed that other problems set in and the situation is reverted.

Another commonly used strategy is traffic routing: This involve redirecting traffic from its normal route, or making a street one way in order to increase road capacity. This strategy is often combined with road widening which means that a one lane width street with capacity of 1000 could suddenly be increased to 3000. The problem in this strategy is the fact that Hawkers,illegal parkers and street traders encroach gradually on the road space reducing it by one or two lane width and the situation is therefore reverted.

There are various instances when parking have been thought to be the major cause of the problem. This also led to the provision of parking spaces, only to realise that people just park wherever they find it convenient to do so.

Another strategy adopted was the odd and even number edict promulgated in 1977 during the Festac; This strategy I dare say have led to the increase of motor vehicles on our roads today. The nature of this strategy is such that, on Mondays Wednesdays and Fridays only cars with odd numbers plates are allowed in congested areas and the even numbers are allowed on other days.

Lagosians have found a way to beat this edict by purchasing two or four cars if the people in a household are more than one.

Various regulations have been adopted to help reduce traffic problems. This regulations are aimed at controlling street trading, Hawkers, illegal parking, loading and unloading of bus passengers, provision of pedestrian facilities as foot bridges and Zebra crossing. All these have been far from adequate especially provision of pedestrian facilities. Wherever they have been provided they are not used because they are not badly needed at the locations in which they are sited.



Plate - 20

"Siting of Barrier". One of the strategies adopted for solving traffic problem. This street was closed to traffic but blesed as parking for Kingsway store.



Plate - 21

The street refered to here was turned into a bus street this is to prevent loading and off-loading of passengers in this area.

The regulations and controls to help traffic are in most cases inadequate. Traffic Control Lights are inoperative wherever they stand due to lack of maintenance.

Other strategies also include siting of barriers to prevent enteries into certain street as in Plate - 20, also, there are instances where certain streets have been closed off to other vehicles for the exclusive use of buses as in Plate - 21. The street is now used for loading

and unloading of passengers. This strategy have helped remove the nuiscance caused by such practices in that area.

The Strategy of Ring Road

Apart from the various strategies reviewed, the most expensive single project ever embarked on for solving the problem of traffic in Central Lagos was the Lagos Inner Ring Road Project. The aim is the same as other strategies.

The contract was awarded in 1975, for 280 Million Naira but on completion the amount exceeded that which was originally stated in the contract because various works involving reclaimation shifting of allignment to make way for the housing scheme and provision of under-passes not included in the original contract.

The Ring Road is about 8.5 Kilometre Long and about 150 Metre out into the Lagoon 80% of the structure was constructed on reclaimed land. It was constructed to join Eko Bridge, Adeniji Adele Road, Ikoyi and Victoria Island. There are also connections to the internal traffic corridors such as Marina,Martins, Odunlami, Cable, Force and King George Road.

The impact of the Ring Road development have been analysed throughout this study and it could

be emphasized again that the aim of the project is far from being achieved due to other factors revealed in the course of the study.

Plate - 22 show part of the Lagos Inner Ring Road.



Plate - 22

Section of the Lagos Inner Ring Road from Marina under pass.

PART - II

CHAPTER - THREE

3.00 PLANNING PROPOSALS

The problem of traffic in central Lagos today has been established and the findings revealed:

1. Lack of planning co-ordination
2. Lack of enforcement
3. Land Use cancentration
4. Human factors.

These have invariably resulted in a deficient street network in terms of capacity and safety, encroachment upon street allowances for many purposes other than movement of vehicles operators for driving laws and regulations.

A great deal can therefore be achieved by establishing the process and policies to alleviate the present situation in the short term and to undertake a continuing planning and implementation program for long term enduring solutions.

3.10 Review of Network Condition

The existing trend of road sidewalk and road encroachment by illegal parkers and sidewalk traders is very serious. The street capacities have been greatly reduced, furthermore when pedestrians are

forced from the sidewalks, which occurs in many cases, an added safety hazard is introduced. It is time to restore sidewalks to the pedestrians and roads to the vehicles. This can only be done by strict parking regulations and enforcement in conjuction with the banning of sidewalk traders where they interfare with the movement of pedestrians and street traders, where they interfare with the movement of vehicles.

3.20 Short term Proposal

The following recommendations include those undertakings that will assist in the alleviation of traffic congestion in Central Lagos and can be implemented in the short term period from 12 - 18 months.

The recommendations have been divided into two parts:

1. Changes that will affect operations of some routes.
2. Changes that require improvements in term of control and provision of facilities.

The improvement recommended for short term are based on the analysis of human factors in conjunction with network deficiencies causing traffic problem, hence proposal for improvement will be in a total package.

Although the existing street usage have resulted in capacity and congested conditions, since the survey revealed that the condition are in most part due to other factors beside excess capacity imposed on them. In view of this, it is recommended that:

1. The existing Road Network should not be altered.
2. Direction of flow should be maintained in all places except where buses are recommended for two way direction of movement.

The Northern part of Central Lagos affected by the present filtering through of traffic is not included in this recommendation, because it is hoped that when traffic problem is solved in the South, the area will also be relieved of traffic problem.

3.21 Enforce Strict Parking Control in These Areas

Nnamdi Azidwe, Balogun, Martins, Ereko, Apongbon, Issa Williams, Odunlami, Bamgbose and Igbosere Streets.

The present measure against indiscriminate parking should be stepped up by towing vehicles immediately they are found in undesirable locations.

3.22 Legal on Street Parking

Legal on street parking should be permitted in as much as it does not interfare with free movement of traffic. So all on street parking in places like Odunlami where parking conflict occur should be removed. The left side of Broad street, left side of Nnamdi Azikwe approach to Carter Bridge.

3.23 (a) Provision for pedestrian sidewalks should be made on all streets, within the Central Business District

(b) Shop operators must not be made to encroach on pedestrian ways with their goods thus forcing pedestrian into the road way.

3.24 Specific Improvements

Aponqbon Street

It is recommended that frontage development should be discouraged especially at the approaches to Eko Bridge.

Nnamdi Azikwe, Balogun, Martins and Ereko Streets

These streets are characterized by heavy pedestrian flow, angular parking major bus route and narrow sidewalk.

It is proposed that

1. An underpass be provided for pedestrian to link with the High Commercial Zone of Balogun,Martins Streets and Ereko
2. Buses on these routes should be made to use Issa Williams and run two way but cars are not allowed to use the route in the same manner. Existing operation as one way should be maintained for other vehicles.

(b) All buses using this route should terminate at Ereko market. Pedestrian under pass at this terminal should lead directly to Nnamdi Azikwe, where customers to the high commercial area can proceed on foot to their various destinations.

(c) Parking control should be stricter in this area.

(d) Cars would not be allowed to stop on the streets, especially on the left hand side.

(e) Metered parking locations should avoid angular parking design. This would infact increase number of space and decrease conflict on location.

Odunlami Street

This street is characterized by heavy pedestrian activity, it is heavy with buses and delay is often at the intersection with Broad Street.

It is therefore proposed that:

1. The bus terminal at the junction of Odunlami and Broad Street should be moved to Igbosere and oil mill street, to reduce conflict at that intersection.
2. Traffic control and signals should be used at the intersection.
3. Buses operations should be controlled.
4. Stopping of vehicles on the right side should not be permitted as it would hinder smooth turning into Broad Street.

Igbosere and Bamgbose

1. Strict control of bus operations in this corridor is proposed as traffic problem is basically that due to loading and unloading. Illegal parking should be abolished on this route as recommended earlier.
2. Taxi rank locations on this route should not interfere with bus route.
3. Sangrouse market causing heavy pedestrian activity especially disturbing traffic on Igbosere Street should be connected by an under pass from the market to the other side of Igbosere.

Force Street

Buses turning into Force Street is causing congestion especially at intersection. Hence it is proposed that:

1. Loading and unloading especially at the intersection area should be discouraged.
2. Buses turning into Marina could come out on Awolowo Road, go on the Ring Road and join Marina Street.

Moloney Street

At the Moloney - Lewis intersection, traffic should be split well in advance of left turn movement from Moloney into Lewis Street. Traffic Control is expected to help in this proposal.

Tinubu Square

Parking must not be permitted on any of the approaches to the square and even not within 50 metres of the square.

Bus shops should be moved completely to as near as possible to the Friday Mosque area on Nnamdi Azikwe Street.

3.25 Traffic Signal/Control Locations

Traffic signals should be provided at all major intersections especially area noted for intersection conflicts.

Control could be inform of using Officers of the Traffic Division or Trained Corp Members of the Lagos State Traffic Warden.

3.26 Hawkers Spaces

Since the major operating environment for hawkers is where vehicles are either stationary or slow moving, it is therefore proposed that spaces should be acquired in parking spaces for the purpose of resettling all hawkers within the area in one spot. Hence

1. Nearby Parking space could be used.
2. Site could be acquired for the development of parking space as well as hawkers space.

3.27 Routes to Link Ring Road

1. Traffic should move from Campus through Araloya to join Ring Road. Araloya should run two way from the intersection of Tokunboh Street.
2. Traffic from around Bangbose and Igbosere could proceed on Tokunboh to join the Ring Road through Araloya.

3.28 Extension of Metropolitan Line

The proposed Metropolitan Line for Lagos State should be made to extend its stops along East-West Igbosere, Nnamdi Azikwe corridor and North-South Williams - Araloya.

PART - II

CHAPTER - FOUR

4.00 REVIEW OF DISTRIBUTION OF CENTRES IN METROPOLITAN LAGOS AND EVALUATION OF THE EXISTING AND PROPOSED NETWORK

Formulation of more enduring solutions is infact formulation of a development plan for an area. The normal approach is to establish the guidelines and policies necessary to formulate the development plan; and then to build within this plan. In Lagos today, it is necessary as a first priority to review the existing and proposed centres and to make recommendations for more centres.

Presently, there is one regional centre existing on Lagos Island and another one is proposed for Ikeja in the North. The Ikeja Centre has been proposed in accordance with the community structure concept developed for Metropolitan Lagos.

The Community Structure for Lagos and estimated population is shown on table - 11.

According to the structure developed different hierachies were proposed on the continuum. It was also emphasized that the expected population of Lagos by the year 2000 will be between 13 Million

TABLE - 11

Residential Communities and Estimated Population
By Local Government Area Lagos Metropolitan Area
1976

Local Government Area/Community	Estimated 1976 Population (000)
Lagos Island	
Lagos Island North	108.1
Lagos Island East	112.9
Obalende	30.8
Ikoyi	46.6
Victoria Island	13.1
Maroko	77.7
Apapa	43.7
Total	432.9
Lagos Mainland	
Iddo	19.6
Badia*	32.4
Aguda*	29.4
Oke Ira	29.1
Abule Nla	11.4
Ebute-Metta	73.6
Yaba/Makoko	58.8
Onike/Iwaya	48.3
Akoka	13.8
Surulere	43.2
Surulere North	50.7
Total	410.3

Local Government Area/Community		Estimated 1976 Population (000)
Ikeja		
Agege North		31.8
Alagba		55.2
Agege		231.0
Ifako		23.2
Aguda		7.8
Hausa		6.6
Ososun		40.5
Ikeja		51.3
Ikeja East		8.4
Oregun		5.1
	Total	432.9
Ikorodu		102..
Mushin		
Ikate*		65.1
Ijesha-Tedo		65.7
Itire		104.1
Isaga-Tedo		14.7
Isolo		12.0
Mushin West		83.4
Mushin North		103.2
Idi-Oro		141.3
Mushin		179.1
Ilupeju		44.1
GRA/Maryland*		35.3
Shogunle		28.8
Mafoluku		51.6
Oshodi		38.6
	Total	967.0

Local Government Area/Community		Estimated 1976 Population (000)
Somolu		
Igbobi*		117.3
Somolu		151.9
Ilaje		36.0
Oworonshoki		9.6
Araromi		8.0
Bariga		43.2
Pedro		12.1
Mende/Anthony		14.0
Ojota		28.2
Ketu		48.0
	Total	460.3
Badagry (pt)		
Orile-Iganmu		44.1
Amukoko		46.5
Ajeromi*		148.2
Ajegunle		142.0
	Total	380.8

Source: Compiled from Quanlitative Land Use Survey of Lagos Metropolis.

and 16 Million, which would be comprised of eight major cities centres organized around a regional core and its transporation system that would link the several parts.

Major planning unit is considered for population of between 320,000 - 2 Million population; range for the location of administrative centre to major centre for 2 million people. Based on this concept, it could be infered that major centre for Lagos Metropolis should be at least 6 - 8 major city centres in addition to the existing and proposed regional centres.

Presently there are five major city centres distributed among the various communities in Ijaiye, Cardozo, Mainland Iganmu and Ikorodu. The transportation links between these centres emphasize major North-South link dividing the communities into six major communities on the mainland and two on the Island. The links developed are well suitable for the proposed centres.

These communities do not all have centres located within them. Admittedly, Amuwo Odofin have not enough population to support such proposal but all the others by-passed in the allocation, are qualified under the proposed concept of central function location developed for the Master Plan of Lagos Metropolis.

The proposed and existing centres and the transportation links are shown on Figure - 18.

4.11 Long Term Proposal

4 centres have therefore been proposed for Metropolitan Lagos in addition to the five existing and proposed major centres proposal is based on:

1. Community structure concept developed for Lagos.
2. Extension of residential communities to
   (a) Lekki peninsula region
   (b) Imuwo-Odofin and Badagry area.

The first two centres proposed based on community structure concept are to be located within Somolu Bariga and Ketu community and the second to be located in Mushin-Isolo community.

Also based on population the two communities, and the travel desire into central Lagos, it is anticipated that at least 50% of resident labour force could be employed within the district. This level of local employment would turn support a viable transport system such as proposed for Ketu and the local transport system in existence in Somolu Bariga community. Also the transport system would eventually provide linkage with the national network.

The uses recommended for displacement from Lagos Island could be accommodated in this area if the desire to locate here is expressed by the owners of the properties, or else they could locate anywhere in the centres provided. But it is recommended that, they could move to the Regional centre proposed for Ikeja area since the centre is presently accommodating the Lagos State secretariat, so that the problem of infrastructure would be minimized.

Uses such as the General Post Office, if and when they decide to move should maintain its present site as a sub-office and also endeavour to distribute Head-offices in the various centres. The functions performed in the offices to be distributed among centre proposed, should compete favourably with each other so that people would not travel to other districts for the reason of service deficiencies.

Other uses of public functions should be treated in the same manner as that described in the case of General Post Office.

Also it is very necessary that attempt to decongest Central Lagos should not ultimately lead to its decay as it is common in most Western Communities, so care must be taken in the implementation of this proposal.

It should be further stressed that the problem of central Lagos is that which require equitable distribution of uses; so if we assume that the number of uses in existence in Central Lagos is just sufficient for its own population, then, additional imposition of population seeking to be part of the users on the uses created the situation found in Lagos today therefore, the main objective or the ultimate goal which is; creating good atmosphere forthe proper functioning of the society, must be reflected in the way we provide and arrange land uses elsewhere.

It is impossible for planning of any centre to be solely for the area, other residents elsewhere is bound to come into the centre, but when movement is balanced between both areas, the problem of over-strained facility would not arise.

This is what the long term proposal is aiming at. Balanced movement within and between communities and not concentrated and one-way movement into one community.

The other two proposed centres is based on the recent residential schemes proposed for the two areas. Badagry Region in the South-West and Maroko Lekki peninsuld in the South-East.

It is assumed for the Badagry Region that the recent proposal made to locate an extension of the University of Lagos within the area would require a major city centre. From what obtains in many areas in which University or Institutions of Higher Learning are located such as Ahmadu Bello University and its relationship with Samaru, Zaria, the host community will definetely need additional support in terms of facilities to be able to cope with the demands of the Institution. So a centre has been proposed on this premises.

Also, the major centre proposed for Lekki penuisula is based on the recently developed scheme for the area at a density of about 1,500 P/ha. also, the location of the center was determined on the basis of removing conflict between the existing regional centre in Central Lagos, so it has been sited in the Eastern corner as indicated in Figure - 20.

4.21 Staggening of Work Hours

Since central Lagos have many Institutions, it is proposed that work hours should be staggese so that concentration of people at the same time and in the same location would be minimized.

This have the added advantage of reducing the strain on the total network system.

4.31 Relocation of the Federal Capital

Federal Government Plan to move to Abuja might an the long run help in the decentralization exercise proposal but it should be borne in mind that those offices occupied by the Government would be reallocated for other uses.

However, it is proposed that uses to be made of those buildings should be those that would comform with the general uses of the area in order not to duplicate problems of traffic elsewhere. So, planning agency would be advice to make recommendation on the appropriate uses based on location or to use the zoning system proposed in Land Use Survey of this study.

Relocation of the Federal Capital is not going to make much difference in decongesting Central Lagos as is the case in many places like Delhi in India, the function for which the centre is noted would continue in spite of the relocation scheme. Infact, it is possible for many offices to maintain their Head Offices in Lagos and have branches in Abuja then vice versa, for the simple reason that Central Lagos is an already established urban centre.

In view of this fact, the problem of Central Lagos could only be seen in the light of being solved through decentralization of functions by encouraging development of other centres elsewhere, with the help of proper planning administration.

PART - III

CHAPTER - FIVE

5.00 PLANNING ADMINISTRATION

The Central Area of Lagos has reached an extremely critical point in its development. Those in authority must decide now along what lines the planning for future development of the area will follow. Obviously there are a number of choices open to them.

Probably, the simplest approach is to do nothing. Planning in Lagos today is undertaken by a number of agencies each with its own goals and ambitions. There appears to be a distinct lack of liason and co-ordination between the various agencies on current projects. Projects of enormous magnitude have been and are being undertaken in isolation with little or the conception of how or if they will be compatible within the framework.

The recommendation here is to instigate planning process that will formulate and direct future growth of the metropolitan area. In a

city of this size, it is sound and essential that the responsibility for planning and directing of future development be vested in one authority this does not exclude other authorities having interest in the area, but it does provide control and responsibility for planning. The level of Government will therefore be encouraged to set the structure and standard for:

1. Residential growth
2. Business and commercial growth especially in the proposed centres.
3. Transportation facilities especially to help reduce traffic problems.
4. Other essential services for the smooth running of a community.

All interelationship between the many facets of Urban living must be explored and defined. The quickening pace of economic development even in spite of the relocation of the Federal Capital, will still necessitate an ever improving environment for future generations. Governmental investments in Lagos should be shelved and investigations conducted on their desirability.

C O N C L U S I O N

The previous chapters have described the existing conditions of traffic operations parking, public transport operations, Land Use pattern and developments from the discussion, it is evident that several deficiencies in the transport system in Central Lagos exist. Perhaps the most glaring traffic problem result from uncontrolled expansion of the Central Business district and Institutional area. The rapid economic boom has resulted in growth without regard for traffic consequence. There are problems of congestion and delays and unadequate mixed of public and private bus operators resulting in undiscipline driving and indiscriminate loading and unloading of passengers.

Several areas of Central Lagos are experiencing rapid change, high rise buildings are springing up in several locations with proposals for many more all of these developments have transportation implications in the recent past, attempts have been made to control the height of buildings and also parking requirement for the users of these buildings but it has not been extended to their customers, very often development takes place withoug consideration of the transporation impact on the adjacent street system.

Lack of building line restrictions in the past have resulted in narrow street with inadequate right of way

and this situation is aggravated by side walk traders especially in commercial areas.

There is total lack of integration of Land Use and transportation planning, this result in the location of residential areas away from the employment area with a consequent increase in travel especially to central Lagos.

This lack of integrating Land Use design with transportation planning has resulted in a transportation network such as the Ring Road surrounding Central Lagos to rely on a few main arterials Central Lagos. The result is the clossing of the arterials.

In view of the research findings it was therefore necessary to propose decentralization of functions providing centres in various communities whose population is enough to support the centres and with the transportation network to make it function properly. It is expected that more than half of the population resident within the community would find employment and services at the centre and need not travel to Central Lagos for basic services and employment.

The exercise is not in anyway directed at causing the 'deBay' of central Lagos but to help in reducing traffic problem created because too many functions are concentrated there.

Other proposals include immediate short term proposal to take care of system deficiencies to help restore normalcy immediately.

It is hoped that the recommendations if and when implemented would help decongest Central Lagos.

BIBLIOGRAPHY

1. Blunden W. R.: Landuse/Transport System Analysis. Pergamon, 1971.

2. Buchanan, C. D.: "Traffic in Towns - Study of the Long Term Problems of Traffic, OHMS, London, 1963.

3. Buchanan, C. D.: 'Mixed Blessings, The Motor in Britain' Great Britain, 1958.

4. Gruen, V.: "No More Off Street Parking in Congested Area", London, 1968.

5. Hall, P.: "The World Cities" 2nd Ed. N.Y., 1977.

6. Hutchinson, B. G.: "Principles of Urban Systems Planning" Washington, 1974.

7. Mitchel, R. & Rapskin, B.: Urban Traffic, A Function of Land Use. Columbia, 1971.

8. Moskowits, C.: 'Theory of Traffic, London, 1964.

9. Smerk, G. M.: Readings in Urban Transportation, Bloomington, 1968.

10. Tettow, J. & Gloss, A.: Homes Towns & Traffic, Faber, Great Britain, 1968.

11. Waters, L. L.: 'Free Transit A Way Out of Traffic Jams', London, 1968.

12. M. Wohl. & V. Masten: 'Traffic System Analysis for Engineers and Planners' Mcgraw Hill, 1967.

JOURNALS AND REPORTS PAPERS

13. Adefolalu, A. A.: 'Traffic Congestion in the City of Lagos' The Nigerian Geographical Journal, Volume 20, No.2, 1977.

14. Adefolalu, A. A.: 'Technology of Movement' Seminar Paper, Geography Department, University of Lagos., 1980.

15. Adenle, J. O.: 'Factors Militating Against Free Flow of Traffic in Metro Lagos' Being the Text of a Paper Presented at N.I.S.E.R., Ibadan, 1978.

16. Adenle, J. A.: 'Need for Metroline in Lagos' Paper presented at the 12th Annual Conference of the N.I. T.P., Abeokuta, November, 1981.

17. Berger, Julius: Lagos Inner Ring Road Complex, Paper.

18. Berger, Julius: Lagos Inner Ring Road, Report on Tender and negotiation; Federal Ministry of Works, Lagos.

19. Chadwick, G. F.: 'Car Parking in City Centres' R. I. T. P., Journal, Volume 5, April, 1961.

20. Doxiadis and Associate: Lagos State Regional Plan, Report 4.

21. Gibberd, F.: 'Town Design' The Architectural Press, Volume 3, 1968.

22. Journal of American Institute of Civil Engineer: Assessing Impact of Urban Transportation, August, 1972.

23. Kraft, W. H. & Scharwaltz: Midtown Manhattan Circulation and Surfacing Transit Study and Development Project.

24. Lagos State Development & Property Corporation.: Dolphin Scheme Phase I & II.

25. Lagos State Gazette, Volume 13, November, 1980.

26. Master Plan Project Unit, Lagos.: Technical Report - II

27. Master Plan Project Unit, Lagos.: Community Structure for Metropolitan Lagos, Report No.8., 1980.

28. Master Plan Project Unit, Lagos.: Transportation Analysis for Lagos State, Report No.8, 1980.

29. Master Plan Project Unit, Lagos.: Provision of Social Infrastructure. Bulletin - 5, 1980.

30. Master Plan Project Unit, Lagos.: Land Use and Rate of Construction Qualitative Land Use Survey, 1980.

31. Master Plan Project Unit, Lagos.: Position Paper Traffic Restaurant Technical Memorandum - 24.

32. Rabe, F. T.:& Hidson, J.R.: Highway Impact on Urban Development, Journal of the A.S.C.E., November, 1975.

33. Tuemmle, F. W.: Land Use and Express Ways, Journal of the A.S.C.E.,September, 1961, City Planning Division of ASCE.

34. Underwood, R. T.: Planning Implication of the Ring Road. Journal of Urban and Regional Development Division, November, 1980.

35. Transpoconsult: 'Lands Area Transportation Study' Final Report, 1975.