PROPOSED DESIGN OF MOGADISHU AREA AS A SUB-CENTRE OF KADUNA CITY CENTRE

M.Sc. (URP) Thesis

By:

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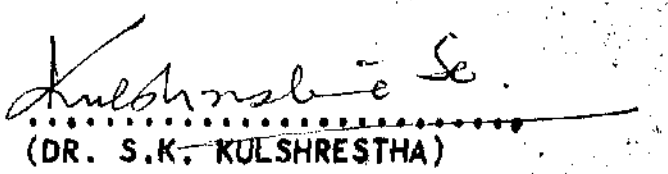
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CERTIFICATE

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

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ZARIA.

JULY, 1982

DEDICATED

TO

MY WIFE, ESTHER ENYE

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

Among the numerous people who helped to see to the success of this thesis, I wish to acknowledge the following specifically:-

Mr. G.P. Khanna - my mentor - who devotedly supervised me through the design.

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Lastly, but not the least, to my family and especially my wife who couldn't get my attention during this time that she was sick. I offer my apologies and gratitude to all.

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Zaria
July, 1982

Arc. Darius D. Ishaku.

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CHAPTER 1

1:00 I n t r o d u c t i o n

1.10 Theoretical background - Literature Review.

1.20 Statement of Problem

1.21 - Need to have city centre explained

1.22 - problems of Kaduna central area.

1.30 Goal and Objectives

1.40 Scope and limitations

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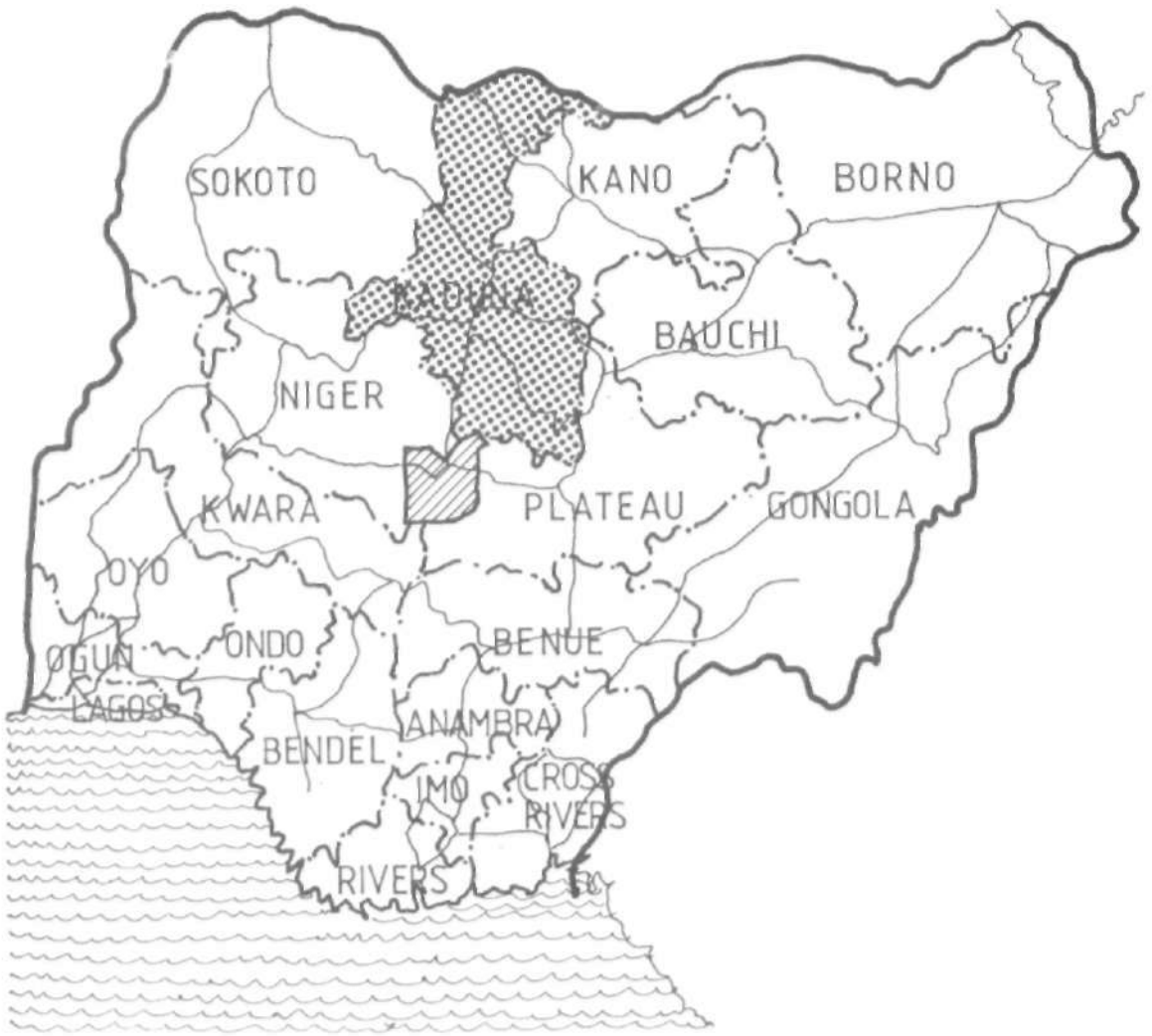
CHAPTER 1

1.00 Introduction:

Kaduna town has been an important town since the inception of colonial administration in the country. It was the regional headquarters of the then Northern Nigeria until the creation of the 12 states in 1967. Then became capital for the North Central State and later Kaduna State when further states were cretated in 1976. The function of the town can not be over emphasised as it served as administrative, military, commercial and industrial centre to the whole country. It is not only centrally located in the country, its also a junction to various forms of communication.

An important regional centre as it is, however, Kaduna does not have a planned central area that is functionally laid out and is responsive to the needs of the metropolis. What may be called the central area may be seen more as an accidental development. There is therefore the need for a well integrated and purposefully designed central area. Since city centre is identified as the heart of the city, the all that is best, the business and economic centre, this thesis will design a centre that bears these functions. The thesis will also integrate the old existing commercial strip and consider the whole town in relationship to the centre.

THE NATIONAL CONTEXT



The author will define the city centre as part of the town that has all her major activities taking place be it economical, social, cultural, political or otherwise. The city centre is where the market, the main religions buildings, an open space or square the chief palace, etc. are located. It is the melting pot of all the city's activities. The image of the town. This definition could be further refined as follows:

1. The Emir's or Oba's or Chief's palaces signifies the political aspect.
2. The square signifies the recreational aspect of the city.
3. The market signifies the commercial aspect.
4. The mosque, shrine or church signifies the religious aspect.
5. The open space signifies the social aspect.

In effect city centres comprises of basically five components namely: the political, commercial, religious, social and recreational. The category of importance of each of these will vary with each town in relation to historical background, socio-economic and socio-cultural importance.

1.12 Existing City Centres' Situation:

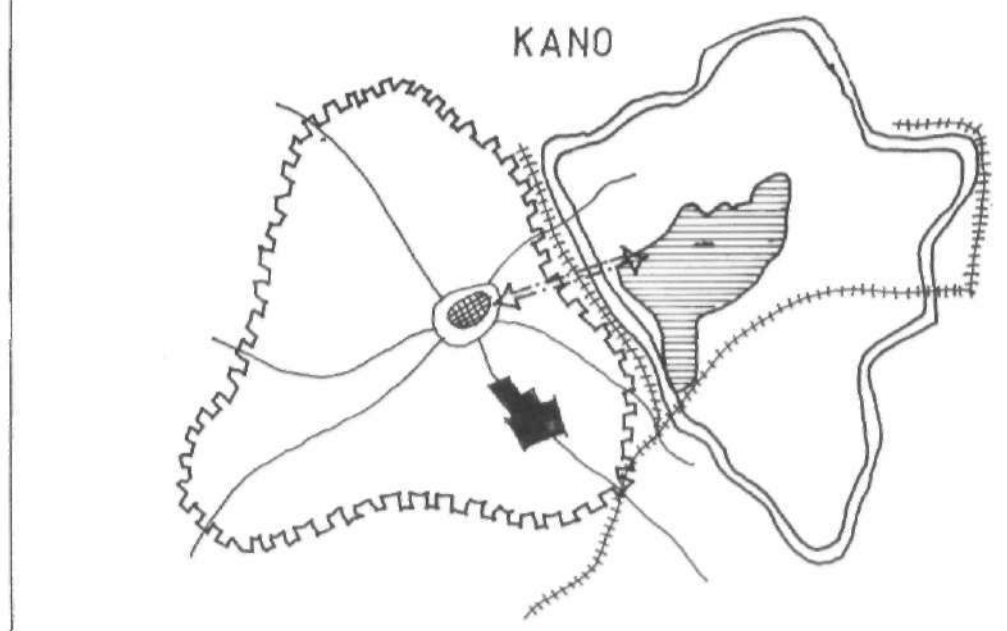
Problems of City Centres:

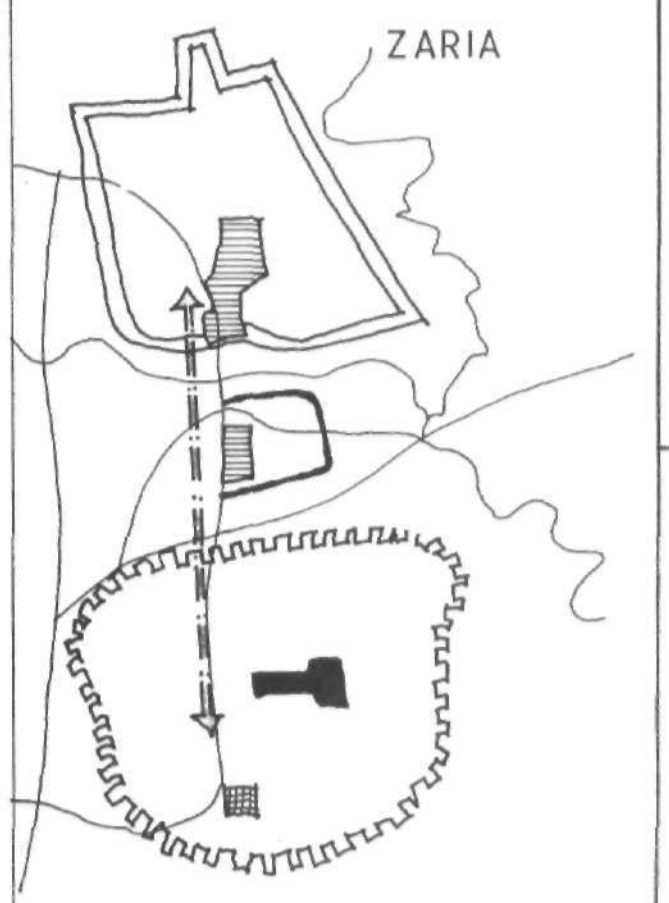
Nigerian City Centres are undergoing numerous problems. Traditional city centres have been left to [redacted] and decay. New city centres have been over used as they were not conciously planned as central areas. These problems can be broken down as follows:

1. Lack of proper defined communication and transportation systems which leads to (a) inaccessibility, (b) mixed traffic and (c) road congestion.
2. Lack of organisation of landuses.
3. Lack of control in development, legislation, etc.
4. Lack of purposefully designed buildings and sanitation.

1.13 Dual nature of city centres:

The colonial masters with their coming developed their own city different from the traditional city. This modern city subsequently developed her city centre which is quite different from the traditional city centre. The new city centre has all its functions based on the European type of concept.





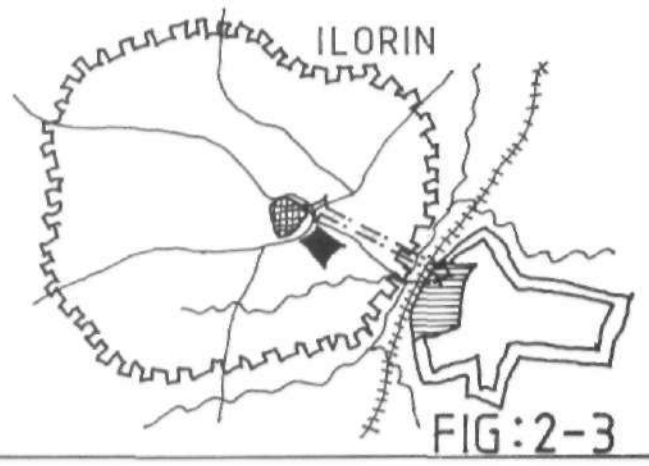
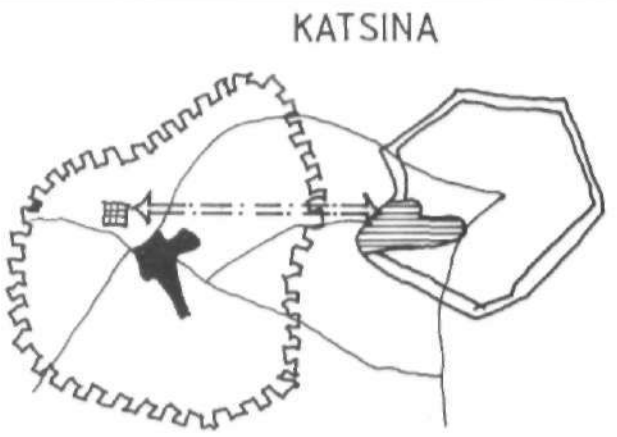


FIG:2-3



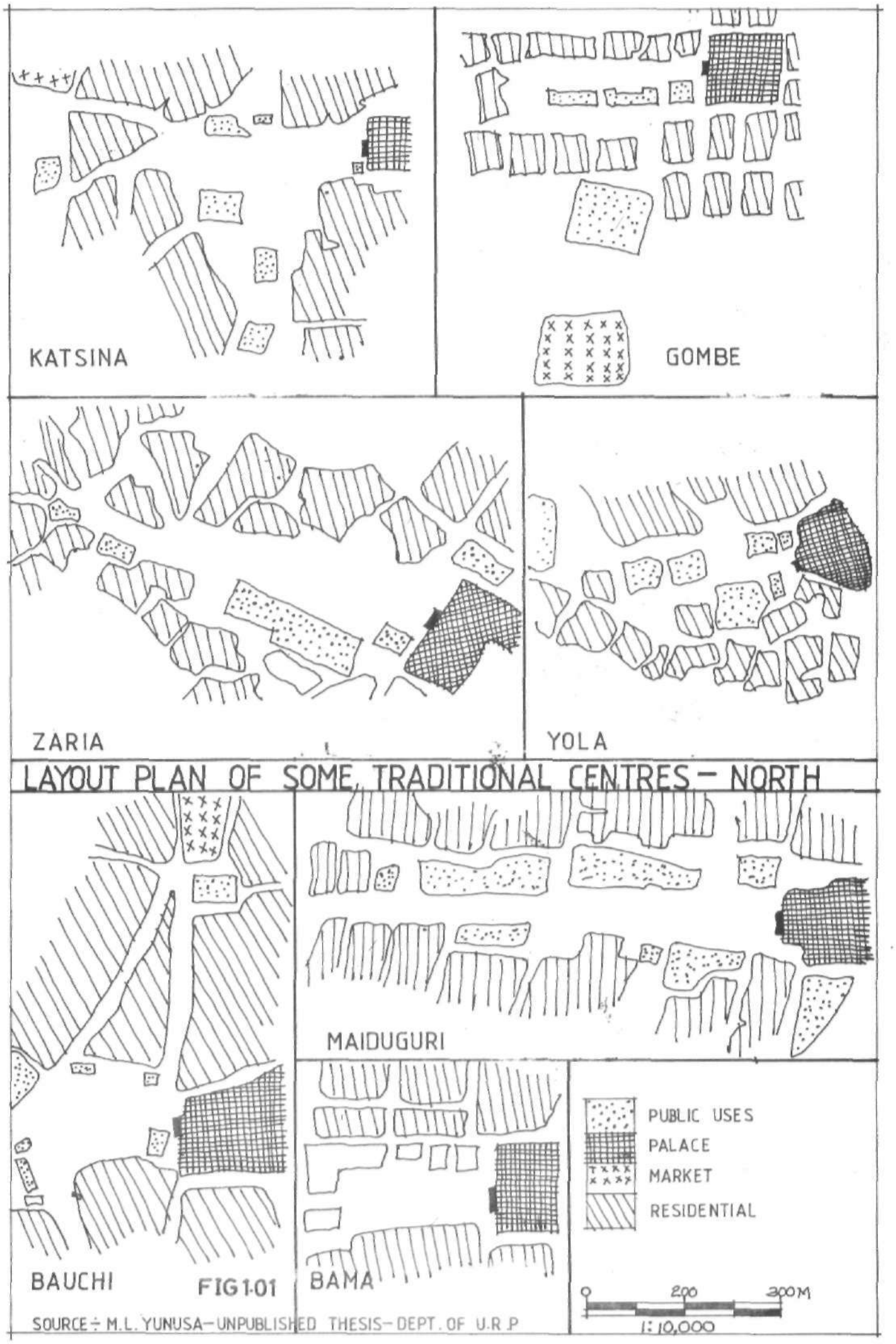
THE DUAL NATURE OF SOME NORTHERN NIGERIAN CITIES

TRADITIONAL CITY WALL
PALACE
TRADITIONAL MARKET
COLONIAL TOWNSHIP
MODERN COMMERCIAL CENTRES

EXPECTED BUSINESS MOVEMENT BETWEEN MODERN & TRADITIONAL CENTRES (author's idea)

1KM

FIG 2-01 SOURCE ÷ M.L.YUNUSA – UNPUBLISHED THESIS – DEPT. OF U.R.P. ABU ZARIA



LAYOUT PLAN OF SOME TRADITIONAL CENTRES – NORTH

FIG 1.01

SOURCE :- M.L. YUNUSA – UNPUBLISHED THESIS – DEPT. OF U.R.P

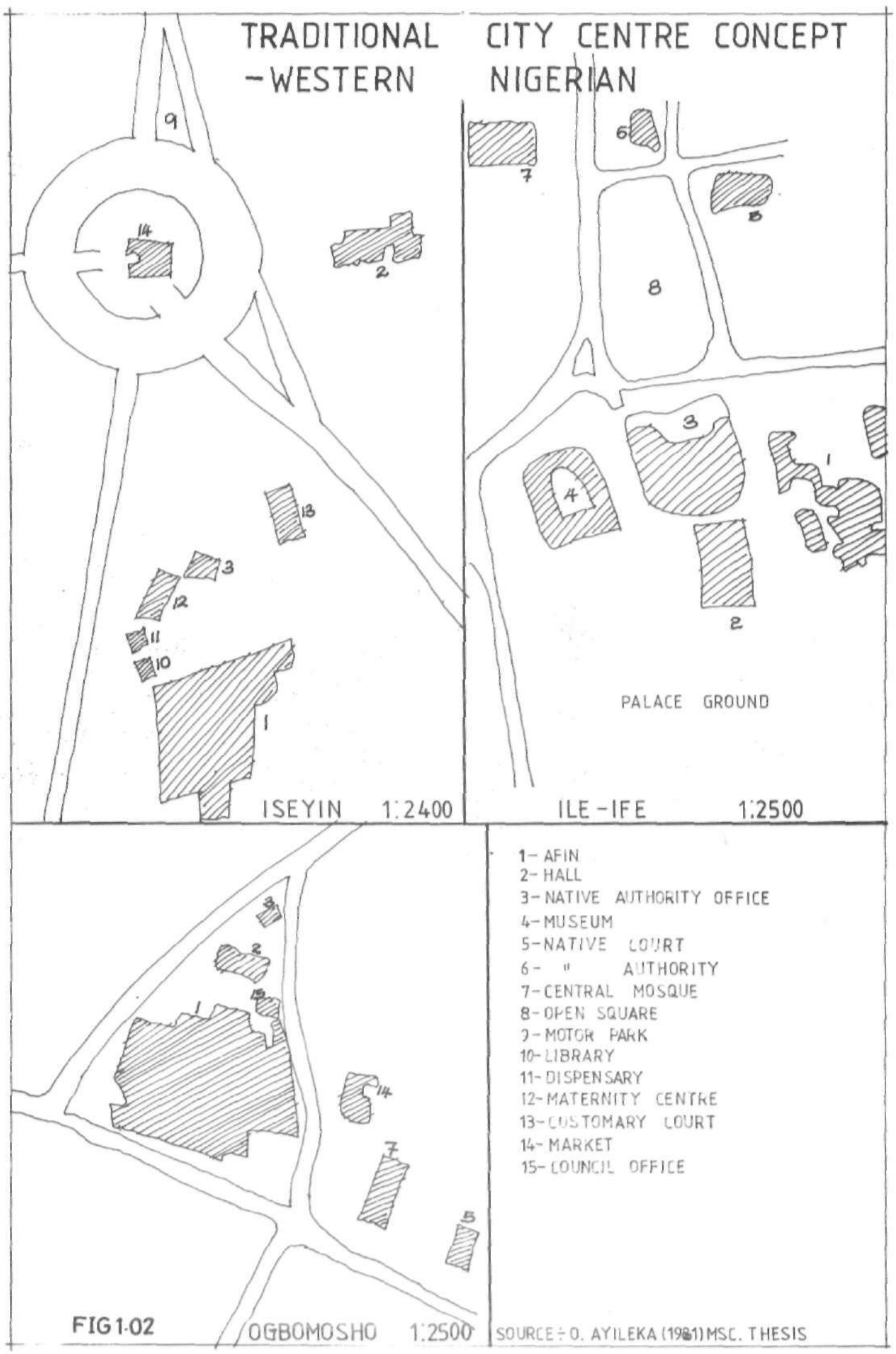


FIG 1·02

SOURCE :- O. AYILEKA (1981) MSC. THESIS

With the development of both traditional and modern city centres going on within the same town, we now have a twin city centres in most of our old Nigerian towns except the new towns which were established by the colonialists. The dual nature of these centres strikes one's mind that something should be done to integrate the two so that they all function as one yet maintaining their identity (fig. 2.01). "Now there is a growing pressure for these two parts to function together as parts of one continuous urban area, which suggests that there should be an integration of the two"4 Traditional city centres could be given a face lift by providing those essential services that are absent e.g. design of adequate parking spaces, larger roads, new roads, provision of traffic lights, organisation of landuses, etc. Kaduna town has no traditional city centre.

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4. M.L. Yunusa - (1980) city centre for Greater Yola an unpublished M.Sc. Thesis - Dept. U.R.P., A.B.U., Zaria.

1.14 Changes in city centres:

Noticeable changes have been taking place in city centres. Most noticeable of this in the traditional centres is the change in role of the traditional rulers. With the coming of the local government chairmen in 1976, the exphasis on the traditional rulers became less. The chairmen were given more powers and perform more functions than the traditional rulers. This in turn affects the functions of the traditional centres. They are gradually and surely losing their positions.

Construction of highways through our city centres creates the notorious problem of traffic congestion e.g. Kano. What used to be known as Kurmi Market - has been destroyed by the introduction of vehicular traffic. In Bauchi the main through traffic cuts across the city centre thus destroying the traditional city centre set up and creating chaos. Beautiful traditional buildings could be seen destroyed to give way to the new major road which had brought along it problems instead. New elements can be seen added to our city centres some good and some bad. Zaria "Juma" Mosque and architectural master

piece is being covered by modern western architecture. Style of building construction are visibily changing the face of our city centres. e.g. Kaduna. High office buildings and hotels spring up along Ahmadu Bello Way with modern architectural building styles.

Enchroachment upon open spaces is another form of change taking place in our centres. Beautiful open spaces are slowly and surely being replaced by buildings. Thus depriving the citizens of what used to be a recreational, social and ceremonial grounds .e.g. The Kaduna cultural dances and traditional Wrestling used to take place at the spot where the multi-storey block of New Nigerian Newspapers offices is being built. In Zaria it can be seen that modern buildings and local government offices are being built in what used to be part and parcel of the open space in front of the Emir's palace.

1.15 Requirements of city centres:

Lewis Keeble in his work writes that: "The most important requirements for a town centre are geographical centrality, accessibility for vehicles and pedestrians, ample parking space and a high measure of compactness"2. In considering

Nigerian cities we can place our requirements under functionality which can be subdivided into (1) identity, (2) accessibility (3) compactness and (4) beauty.

(1) Identity: All of our traditional city centres bears one kind of identity or the other. They may have= large prominent buildings usually containing the chief's palace, administrative offices, religious buildings, etc. There could also be seen pronounced wall decorations and arts of high value. One can go on to enumerate so many of such identificational features of our centres. Somehow in all of the traditional city centres something different exists which is unique from other centres that reminds you immediately that you are here - in Zaria City Centre, or Kano City Centre and not Yola City Centre or Ibadan City Centre without having to read it up. This uniqueness play an important role and must be seen to exist in all our new city centres.

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2. Keeble, Lewis (1952) principle and pratice of Town and Country Planning - Estate Gazettees - London.

(2) Accessibility: Our city centre's major problem is that of accessibility and for any centre to be functional, there most be accessibility. Since motor car has become part and parcel of the city centre, adequate and fast traffic routes should be designed to avoid the usual bottlenecks experienced in city centres. Adequate parking spaces to be designed.

(3) Compartness: This is an important aspect of the city centre and most Nigerian centres lack compactness. City centres are dispersed and diversed. They are un-organised. This creates a problem most especially to a visitor who will want to visit as many places as possible and as quickly as he can within the city centre. When the centre is too wide and large it discourages one from moving from one part to another and also tiring. So densely built buildings close together with related functions make for easier economical use of land and functional interrelationship.

(4) Beauty: As Louis Kahn - the famous American Architect - has rightly pointed out that all that is best is associated with the city centre. This is quite true even considering our city centres, everything that is most

beautiful is found here e.g. the old Zaria Central Mosque - an architectural master piece - is found within the traditional city centre. Everything that is biggest or largest is seen to exist in the city centre. Hence, new city centres, the sense of beauty should be seen to exist everywhere.

I. Elements found in traditional centres include:

a. large open spaces around which could be seen the palace, market, public functions and residential areas (fig 1.01)

b. Existance of political authority being signified by having palaces, etc.

c. Existance of open green and concept of outdoor spaces.

d. Existance of mixed landuses.

II. Elements found in colonial centres:

a. Distinct landuses. Commercial separate from residential, industrial, etc.

b. No generous open spaces and squares.

c. High commercial activities within central area. Commercial activities mainly along traffic routes.

1.20 Statement of Problem

1.21 Need to have city centre explained:

- Assessment of the need for a city centre -

(A) Quantitative assessment:

(i) Size of Kaduna town,

Width = 6.4km (4 miles)
length = 17.6km (11 miles) > 113 km^2 (44 miles)

area of town = 113km^2 = 11,264 hectares

central commercial area = 128 hectares

pop(1982) = 834,585 city centre area now

covered = 128 Ha

pop(YR2,000) = 3.4 million city centre area to be

covered = X

$$\therefore X = \frac{128 \times 3,400,000}{834,585} \text{ Ha} = 521.45\text{Ha}.$$

If Kaduna in 1982 with estimated population of 834,585 has an existing central commercial area of 128 Ha, it is expected that by the year 2,000 with population of 3.4 million the central commercial area should cover an area of 521.45 Ha assuming the same rate of development.

With this huge amount of area required therefore, there is the need that a new defined area be planned as the existing area will grossly be inadequate. Two options of vacant areas exist within the centre (1) one at former Mogadishu barracks and the other, the open space behind the commercial strip along Ahmadu Bello Way/Hospital Road. As for this open space it is better kept since it serves as a good green area within the centre and can be properly landscaped to be used as garden and relaxation spot.

(ii) present problems of congestion, traffic, misused landuses, etc already suggest the tight area now available for central area activities. This implies that if a defined city centre is not proposed now, the situation will certainly be worst in future when the population of the city would have tremendously increased (see table 3.1) population expected to have tripled by year 2,000.

(iii) Initial plan for Kaduna have not provided for a planned city centre and later provisions have long been out dated due to the fast growth of town hence the need to have a new design.

Existing Landuse Of Kaduna Town

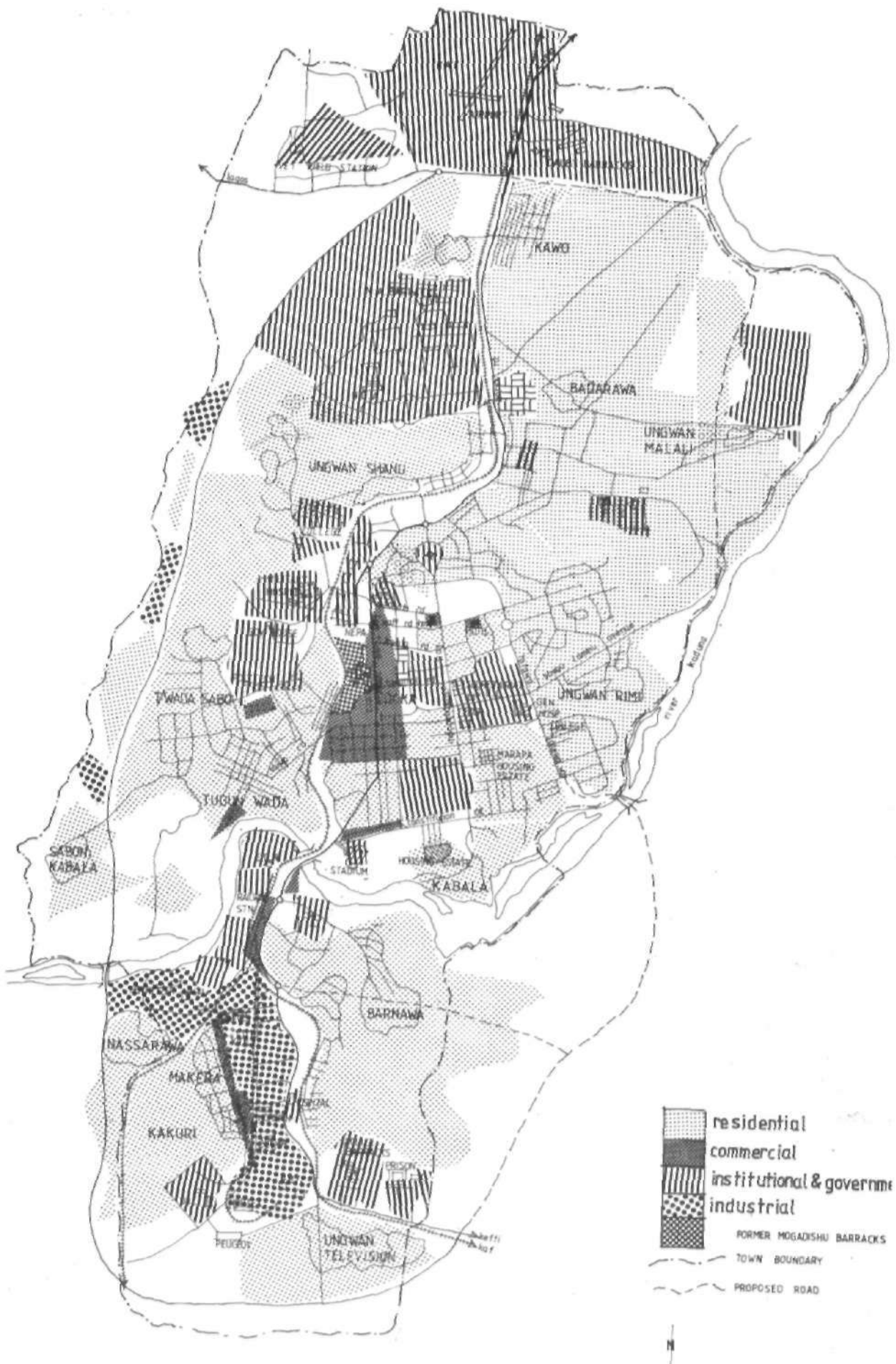


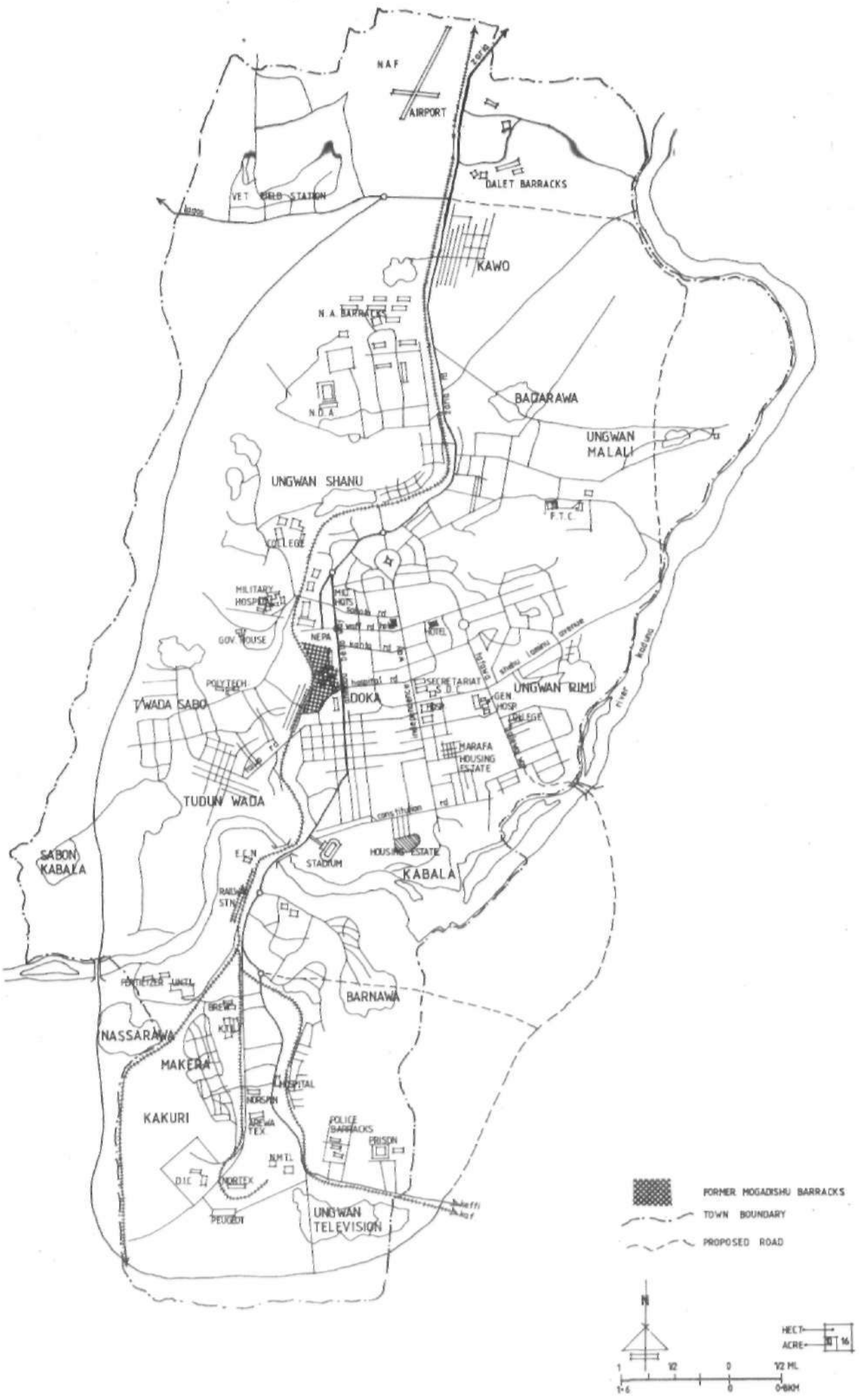
FIG. 2·02

(iv) The lack of hierarchy of centres in the MaxLock plan of 1967 and Omokhodion proposal of 1978 suggest a need for a new defined city centre to cater for the needs of the whole town.

(B):- Qualitative Assessment:

(i) Former Regional headquarters:

Kaduna was from 1914 - 1967 the regional headquarters of former Northern Nigeria now comprising of (1) Borno State, (2) Gongola State, (3) Kano State, (4) Bauchi, (5) Kaduna State, (6) Sokoto State, (7) Niger State, (8) Plateau State, (9) Kwara State and (10) Benue State. It was where the seat of the then Northern Nigerian government with the premier as the overall head. Kaduna still has strong attachments with all the former provinces which are now states. They look forward to Kaduna for most of their standards. Most of the senior civil servants where officers with the former Northern Region. The town serve as a centre for most of the Northern Region assess. It is here we have the headquarters of N.N.D.C. (Northern Nigerian Development Company) which takes care of all the assests owned by the former Northern Nigeria in trust for the 10 northern states.


NAF
AIRPORT
DALET BARRACKS
VET FIELD STATION
KAWO
N.A BARRACKS
N.D.A
BAGARAWA
UNGWAN MALALI
UNGWAN SHANU
P.T.C
COLLEGE
MILITARY HOSPITAL
GOV HOUSE
NEPA
HOTEL
SECRETARIAT
GEN HOSP
UNGWAN RIMI
POLYTECH
WADA SABO
DOKA
MARAFA HOUSING ESTATE
TUDUN WADA
SABON KABALA
E.C.N
STADIUM
HOUSING ESTATE
KABALA
RAILWAY STN
BARNAWA
NASSARAWA
MAKERA
KAKURI
HOSPITAL
NORSPIN
NORTEX
POLICE BARRACKS
PRISON
PEUGEOT
UNGWAN TELEVISION
FORMER MOGADISHU BARRACKS
TOWN BOUNDARY
PROPOSED ROAD
N
HECT
ACRE
16
1
1/2
0
1/2 MI.
1·6
0
0·8KM

(iii) As Federal Capital Territory:

In 1976, the Federal Military Government declared Kaduna and Port Harcourt as federal territories. This means that they bear the same status with Lagos - the federal capital and major infrastructures and services will be the responsibility of the Federal Government. Federal Government will therefore establish their major administrative and business offices in these two towns to cater for other parts of the country. For example, the establishment of Kaduna Oil Refinery, petro-chemical industry, fertilisers industry, etc. In terms of communication there will be 1st order international airport, railway stations, road terminus, etc. Establishment of institutions of higher learning and Universities. This important role of being a federal territory demand a modern and new city centre that will meet the added functions of the town.

(iv) Accessibility:

As a junction of railway and major roads, it is well served with major inter-state and regional roads. An international airport to be commissioned this December will further the accessibility to other international routes. These advantages make the town accessible to most Nigerians.

(v) Centrality:

The town is the most central large city in the country. The centrality make her famous in locating of federal government industries, factories, institutions, etc. Any project coming to the North is most prefered to be in Kaduna for the central nature and expected distribution to other Northern parts. This reason also attracts a lot of investors and private companies to site their factories and offices for proper distribution and coordination. The added advantage of centrality re-enforces the need for a city centre.

(vi) Industrial City:

For reasons like good accessibility, centrality, regional headquarter, state headquarter, and federal territory have contributed in making the town an industrial city. These factors are of important advantage to the industrialist who sees Kaduna as a good site for location and distribution of finished goods. For this reason a defined city centre will indeed help in the saling of commodities from these industries.

(vii) As Military Garrison:

Since inception - infact the town was first conveived as a military town for the colonial master. It was created by them so as to easily administer other parts of the country. This may explain for the large portion in the central area of the town being occupied by the Military. The present Mogadishu site which was acquired by the State Government was an army barracks (Mogadishu barracks). An area of 48 hectares was formerly being occupied by the Military. This area is where it is hoped that the new city centre of Kaduna will be built. The centrality to the whole of Kaduna justifies this. This military importance with the only military academy in the country and a future plan for a military university. All these contribute to show how desperate the town needs a city centre that will satisfy her wants.

1.22 Problems of Kaduna Central Area:

The problem of Kaduna Centre are numerous among them are:-

(i) Lack of hierarchy of centres:

The maxlock master plan for Kaduna 1967 proposed a single city centre within the central part of Kaduna. There was no centres proposed for the districts and the communities. This is a great deficiency in the whole proposal as a single centre such as it is now creates more problems than the former. The multi-centres could have solved most of the central problems of Kaduna, especially the congestion. Other centres would have reduced the pressure in the present central area and create better and more organised spaces. The lack of this hierarchy has created these problems:

(1) congestion in the central area of town, Bulk of industrial workers from the south are dependent on the central area,

(2) Misuse of landuse .e.g. Hawkers. At some places hawkers could occupy as much as one quarter of the road.

(3) Large amount of central area required. MaxLock proposed a total area equal to 4 miles square for the town centre which is equal to 1,024 hectares. If proposed town centre is to cover 1,024 Ha while at present with population of about 834,585 it is covering only an area of 128 Ha with all the problems of congestion, land misuse, etc. It then means that with MaxLock single - centre there will be 8times more expected land and problems than that already existing. This if left to continue will invariably end up in paralysing the town centre as a whole. Hence, hierarchical order would have greatly reduced the land area and the problems as proposed in this thesis. (fig 3.07) centre areas are distributed to all the districts and communities thereby making the city centre function efficiently.

(ii) Unco-ordinated central functions:

The commercial area in Kaduna are not homogenous and continous. The main administrative area is not within the central area. It is along Independence way which is about 0.8km from Ahmadu Bello Way (fig..3.09...) the main street of the town where commercial activities line up. It is also about 1.2km from the Mogadishu site. The main Market is completely (see figure - Kaduna town showing un-coordinated central functions).

separate. There is no integration between the market, the government offices and commercial strip of Ahmadu Bello Way. The Durbar Hotel along independence way and Hamdala Hotel along waff road are the two international standard hotels which are also far away from the central area. The state house of assembly in Lugard hall at the end of independence way to the North is about 2.0km from the city centre. (fig.....) Non conforming uses like the military zones can be seen right in the heart of the centre. This loose and unco-ordinated nature of central function activities in Kaduna leave the central area in a non homogenous whole. This provide a lot of difficulties in terms of smooth and efficient functioning of the central area.

(iii) Lack of hierarchy of streets:

Kaduna is well served in terms of North-South roads. The main artery the Ahmadu Bello Way, Tafawa Balewa Way, Independence Way, Tudun-Wada roads, etc all run north-south direction across the town. These roads help remove the north traffic to south and vice versal. But the problem Kaduna faces is that of East-West routes. No defined east-west arteries present to remove the traffic from these directions.

Traffic from any part of town going east or west will have to pass through the central area (fig. 3.01 and 3.02). This would have been avoided if regional roads like the Ahmadu Bello Way are built across east-west to remove quickly the traffic within the centre to other parts. It will help bring in external traffics from say Lagos, Kafanchan and eastern parts of the country quickly to the centre and out (fig 3.09). Hierarchy of some streets like Ibrahim Taiwo road, Tudun Wada road, Constitution road, sokoto road, Barnawa road and hospital road can be raised to 2nd order roads with 60.0m right of way. This solve the traffic congestion and make for an easy connection with the central area.

(iv) <u>Lack of Organisation of landuses</u>:

(a) There is lack of defined pedestrian ways within the central area. This creates conflicts with the vehicular traffics. At times even animals. Defined pedestrian ways would have allow for fast traffic which will remove the "go-slow". All pedestrians doing shopping along Ahmadu Bello Way have to risk their lives in crossing the busy traffic. Pedestrian walkways either as underpass or overpass would have removed this danger.

(b) Lack of landscaping. All around the existing town centre of Kaduna no consideration has been given to the landscape. Beautiful trees are destroyed to give way to buildings without being replanted. Nice boulevards with shaded walkways are slowly and surely disappearing. The whole of Ahmadu Bello Way is left barren with no thought to greenery. During hot seasons it is unbearable to be able to walk a distance of ½km for any shopping. Shades along these streets would have allowed pedestrians walk as far as Kingsway roundabout to the market without feeling exhausted - a distance of 2.5km.

(c) Lack of defined parking spaces. This has greatly contributed to the traffic congestion within the centre. This has forced motorists to park along streets and often covering as much as half of the street. The poor parking have on many occasions caused accidents along this routes. A properly defined parking spaces would have removed this problem.

(d) Non conforming uses. Non conforming used are found within the central areas of Kaduna town centre. The most noticeable of them is the military zone. The military occupies large amount of area. This was due to the town's initial function of establishment by the colonialists to serve as

a military base and administrative headquarters. The 48Ha of Mogadishu land was given by the military. The military can still be further convinced to surrender more areas like this for an alternative sites by the government. Hawkers are another problem. They are seen littering the main streets. Some have pitched permanent tent along these routes. This is an eye sore for the town centre. Problem could be solved by allocating defined area for their use.

(e) Lack and misuse of utilities and facilities: Facilities and utilities if ever provided are grossly being misused and not maintained. e.g. public toilets in the market areas are now in deplorable stages. Public toilets are not built within the central area. There is the need for this. No public utilities like telephone boots, post office boxes, emergency fire points, etc. Un-used green park. The green park to east of Ahmadu Bello Way along hospital road is not being used neither is it attainded to so as to attract pedestrians. This if properly maintained and managed could serve as a good relaxation place and green area within the city centre thus, reducing the tension of all built-up areas.

Good integration with the rest of the central area with defined pedestrian connections will make it exceedingly functional. Utilities such as telephone and electric cables that hang everywhere looking urgly could be buried to the ground to provide a neat and nice environment for the central area. Since this is the central area where the best is to be seen.

(f) Absence of cultural values:

Kaduna being a new town and developed by the colonial masters bear no cultural values as attached to older cities like Zaria, Kano, etc. The three basic cultural identity of traditional cities like defined civic square, defined market square and mixed landuses are lacking in the town. The lack of cultural touch in terms of architecture can also be seen. Even older buildings of high art. Building designs more western bear no resemblance with the traditional buildings oriented with very few emphasis on the traditonal courtyard designs.

1.30 Goal and Objectives:

Goal:

To design a city centre for Kaduna metropolitan area that is functionally effecient and responsive to the developmental needs for Kaduna.town.

Objectives:

To achieve this goal the following objectives will be followed:-

1. Assess the need for a defined city centre.
2. Define the problems of Kaduna central area.
3. Conduct surveys in landuse and traffic.
4. (a) propose hierarchy of centres
   (b) Determine the size of city centre.
   (c) Draw up schedule of requirements.
5. Evaluate previous attempts at designing city centre for Kaduna.
6. To identify various alternative concepts for city centre design and recommend one.
7. To propose a city centre design for Kaduna town.
8. Propose policies for implementation.

1.40 Scope and Limitations

The thesis will generally consider total city and for detail will consider Mogadishu as part of city centre. The city centre design will not include architectural details.

The design will be limited to the area acquired by the state government i.e. The former Mogadishu Barracks area - to be called Mogadishu Site. There will be no alternative to this site location for the following reasons:

1. That the Mogadishu site which lies between the existing market and N.E.P.A. office on the west of Ahmadu Bello Way has been acquired by the state government from the military and designated for the purpose of city centre.
2. That the acquired site is within the central area of the city.
3. That the acquired site is central enough in view of the whole city.
4. That the acquired site is close to the existing market and local traders.

1.50 Methodology:

There were four methods used in the process of collecting field data:

(a) personal interviews and discussion with senior government officials to assess the government involvement and concern for the city centre development.

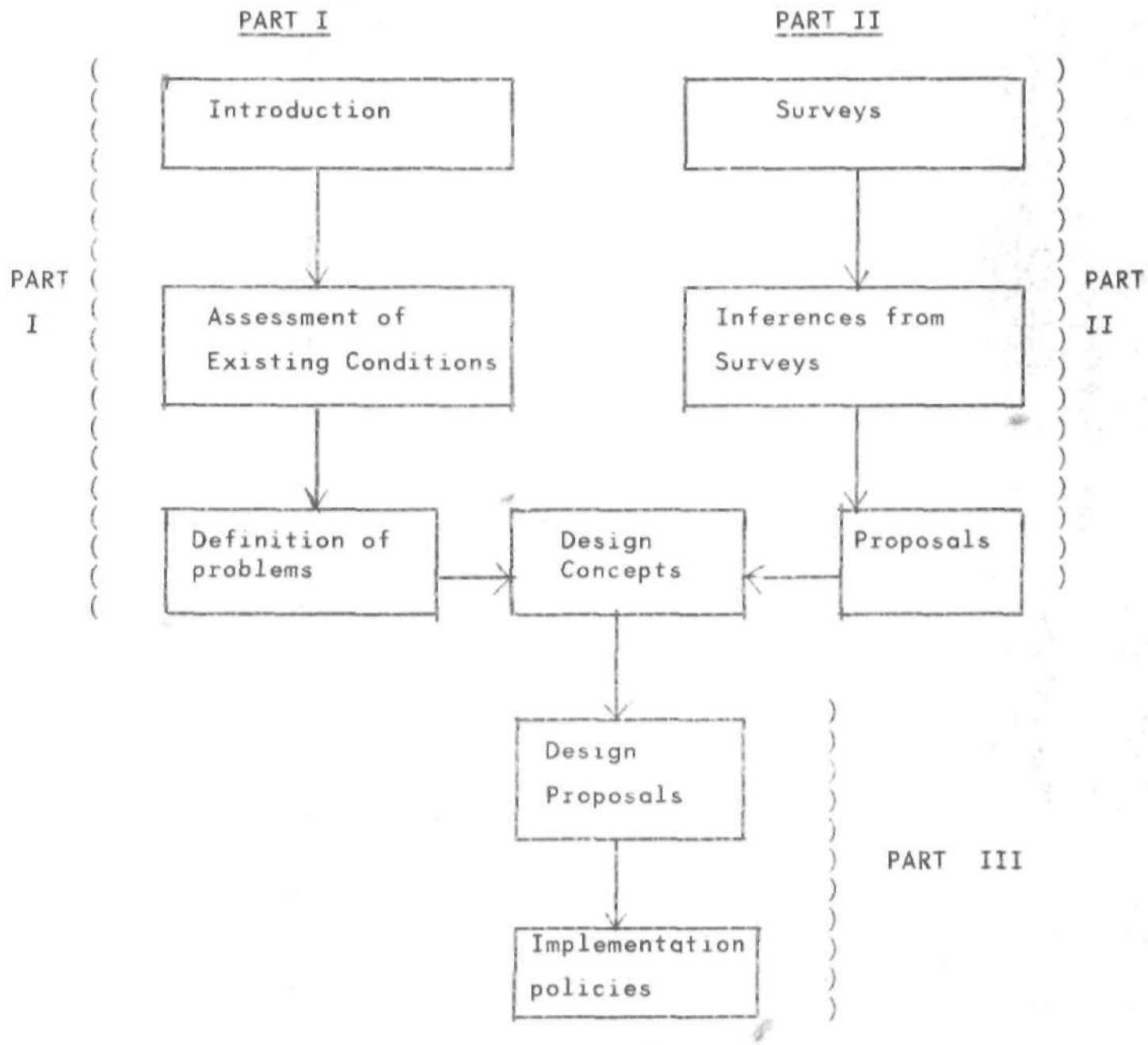
(b) Review of official documents.
MaxLock Master Plan proposal for Kaduna 1967 and Omokhodion proposal for Kaduna city centre 1978 was studied. Criticism and reasons why their proposals were dropped noted.

(c) Field surveys. conducted traffic and landuse surveys were made to determine the extent of the actual physical problems within the central area.

(d) Air photographs, topographic maps and layout plans for proposed landuse were collected during the study to give better understanding of the existing situation.

1.60 Thesis Structure

1.61 Conceptual Framework



References:

1. Doxiadis "Nigeria - Kaduna" 1972 P.7-28

2. MaxLock "Kaduna" London 1967, chp. 2 & 4

3. M.L. Yunusa - (1980) city centre for Greater Yola an unpublished M.Sc. Thesis - Dept. U.R.P. ABU - ZARIA.

4. Keeble, Lewis (1952) principle & practice of Town and Country Planning - Estate Gazettees - London.

CHAPTER 2

2.00 Existing Conditions

2.10 Location

2.20 Climate and Physical Features

2.30 Historical Development

- Brief History.

2.40 Existing Commercial activities

2.50 Traffic and Transportation.

2.60 Existing Utilities, Services and Facilities.

2.70 Existing Landuse

2.80 Previous attempts at designing city centre for Kaduna.

2.81 Evaluation of MaxLock Plan.

2.82 Evaluation of Omokhodion proposal.

2.10 Location:

Kaduna is the capital of Kaduna State (fig 2.01). It is located between latitude 10.4°N - 10.7°N longtitude 7.2°E - 7.6°E. The town is linked with other towns by trunk 'A' roads, 80km south of Zaria, 230km west of Jos, 176km from Kano and 160km from Abuja the Federal capital.

2.20 Climate and Physical Features:

Climate: Within the dry period from November to March the dust laden harmattan wind, dry, cold and often strong, blows from the north-east straight off the sahara regions. On the arrival of the first rains in April, the prevailing wind changes to the south-west and continues from May to October. The rain storms are usually violent with thunder and lighting, proceeded by a driving wind. Kaduna normally has some 51" of rain during wet season, with only a single rainfall peak in August and September (fig 2.03)



fig 1·001

Fig 2-01

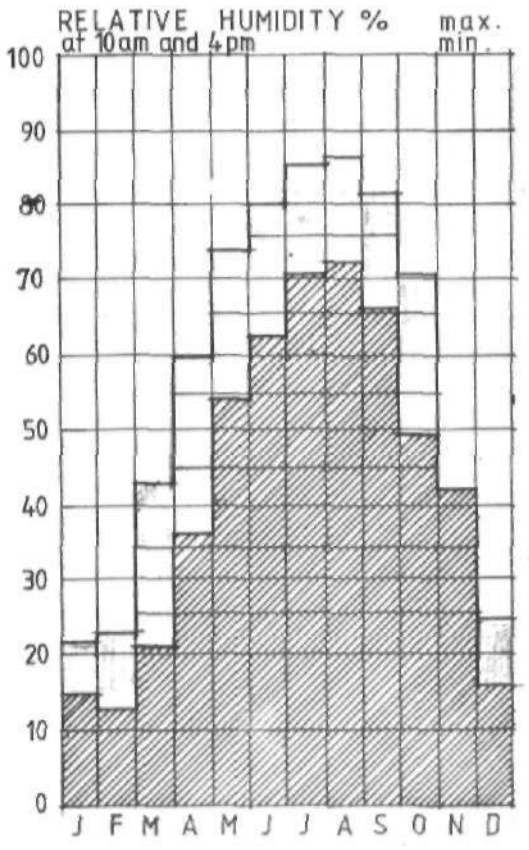
Soil and Vegetation:

The soils over Kaduna area are generally of the Northern plains and are of laterite formed from drift deposits which mantle the solid sedimentary and pre-cambrian basement granite rocks. Kaduna lies within Zaria soil group where the covering material may be up to fourteen feet in depth. Being of fine texture, this soil is relatively difficult to work because it tends to become water logged with heavy rain and to dry out and crack during the dry season (MaxLock 1967:20). Kaduna lies in the North Guinea zone (MaxLock 1965:21) which takes in most of the Zaria province and the vegetation consists mainly of "orchard bush". There is continous cover of well developed trees, some 36-45ft high which is often dense enough to suppress grass. However, most areas have become open or park - like grass land as a result of much changes over the centuries by cultivation, burning and grassing.

Topography and Geology:

Kaduna falls within the North central high plains. Regional topography of this area consists of rolling terrain with little relief situated around 2,000ft. above sea level.

Climate Data Of Kaduna Area



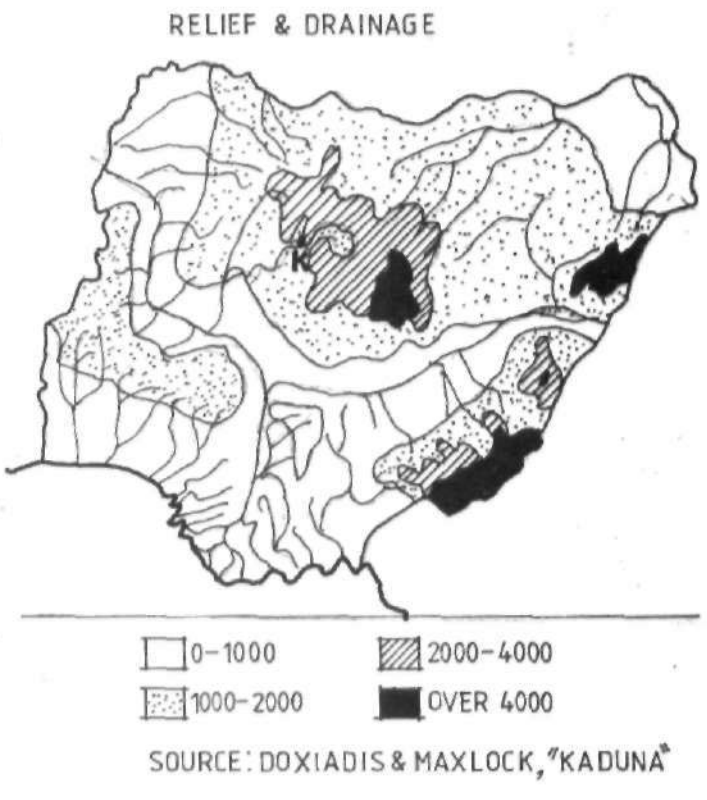


FIG. 2·03

Sporadic rise of solid granite in-sellergs like great domes, which to the east and south-east from Kaduna, abruptly ends in the Jos plateau escarpments. The entire region is drain by the Kaduna river which is a major tributary of the Niger river. The dominance of the Kaduna river system is so great that this region, can be properly designated the upper Kaduna Basin (Doxiadis 1973:8) (fig 2.03).

Basic geological structure is magnatic of mixed streaky rocks, granite in parts with darker, softer bounds and much varied. Most of the area over the surface has decomposed to laterite. Erosion is mainly by the small streams that cut deep galleys leaving the residual laterite caps to be gradually eaten away at the edges by natural forces of rain, wind and vegetation (MaxLock 1967:20).

Historical Development:

The word "Kaduna" is associated with the Hausa word "Kaduna" - plural of crocodile - and the existence of the river Kaduna itself (Doxiadis 1973:7). It was established in 1917 and marked the end of a protracted search for a suitable administrative and military capital of what was then the protectorate of Northern Nigeria. Lokoja had earlier been

the first Federal Capital (1899 - 1901) succeeded by Jebba (1901 - 1902) and later by Zungeru (1902 - 1917). (Doxiadis 1973:7) Sir Frederick Lugard, the chief architect of the administrative structure in Nigeria is reported to have expressed the view that Kaduna had certain advantages to recommend as a site:-

1. A good soil and tolerable climate.
2. Availability of ample water supply.
3. A central position within former protectorate of Northern Nigeria.
4. An administrative and military location which was isolated from existing towns and was therefore free from local political complications.
5. As a rail junction and Nigeria's biggest passenger exchange point where trains meet from Kano, Kaura Namoda, port Harcourt and Lagos; it was properly equiped to take up a greater responsibility as the Northern Nigeria Capital (1960). Within a newly created independent Federation of Nigeria and subsequently (1967) as the capital of present Kaduna State. (Doxiadis 1973:7).

Until 1967 when New States and their capital followed by mass exodus or deployment of civil servants, Kaduna's administrative importance was second to none in the north. Today, Kaduna has become an important industrial, commercial and military training centre. Recently it was declared a Federal Territory which gives it an added importance. It covers an estimated area of 11,264Ha. The city of Kaduna has grown synchronously in two parts, separated by Kaduna river with the northern part being the largest. The city has expanded mainly along the north-south axis and taken a long overall shape (fig 2.01). The first phases of growth were at Kakuri, Makera, Kaduna main railway station (south) area, the G.R.A. in Doka, all between 1915-1932 (Doxiadis 1973:31-34)

2.40 Existing Commercial Activities:

This use attracts an area equal to 128.0 hectares (1.14%) in the centre which comprises of the town market and some other commercial establishments scattered within. This percentage of development devoted to the use is small (fig 2.02). These activities line up along the major routes. Their incidental development are without any planning base. Highest concentration of commercial activities are found along the main highway - Ahmadu Bello Way - and the market.

Others are along hospital, Kanta, Kano, Ibrahim Taiwo roads all within the central zone of the town. In the residential areas also these developments are found along major streets entering them. The result of these unplanned developments are traffic jams, dangerous pedestrian and motor traffic crossings, ugly and unattractive buildings, lack of proper parking, loading and unloading facilities.

2.50 *Traffic and Transportation*:

Traffic in Kaduna is basically North-South. The main arteries run in this direction. Moving East-West is not well defined. The presence of one bridge within town connecting the north and south slows down the business of the town. Accidents on the bridge could hold up traffic for hours and the distinct function of the two parts of Kaduna are such that they must interact. The second bridge along the western by-pass is too far to be used effectively for inter city movements. There is an urgent need for one more bridge to be built across the river on the eastern side to connect the south with Kawo. Need also for East-West regional routes so as to move traffic quickly in and out of town. Traffic congestion within the central area is a

common seen. This is due largely to the lack of East-West routes, lack of parking spaces, lack of signal lights, and lack of road hierarchy. During peak hours high volume of traffic build up along Ahmadu Bello Way sometimes as high as over 4,000 p.c.u is recorded. This shows the need for a better organised traffic network within the central area.

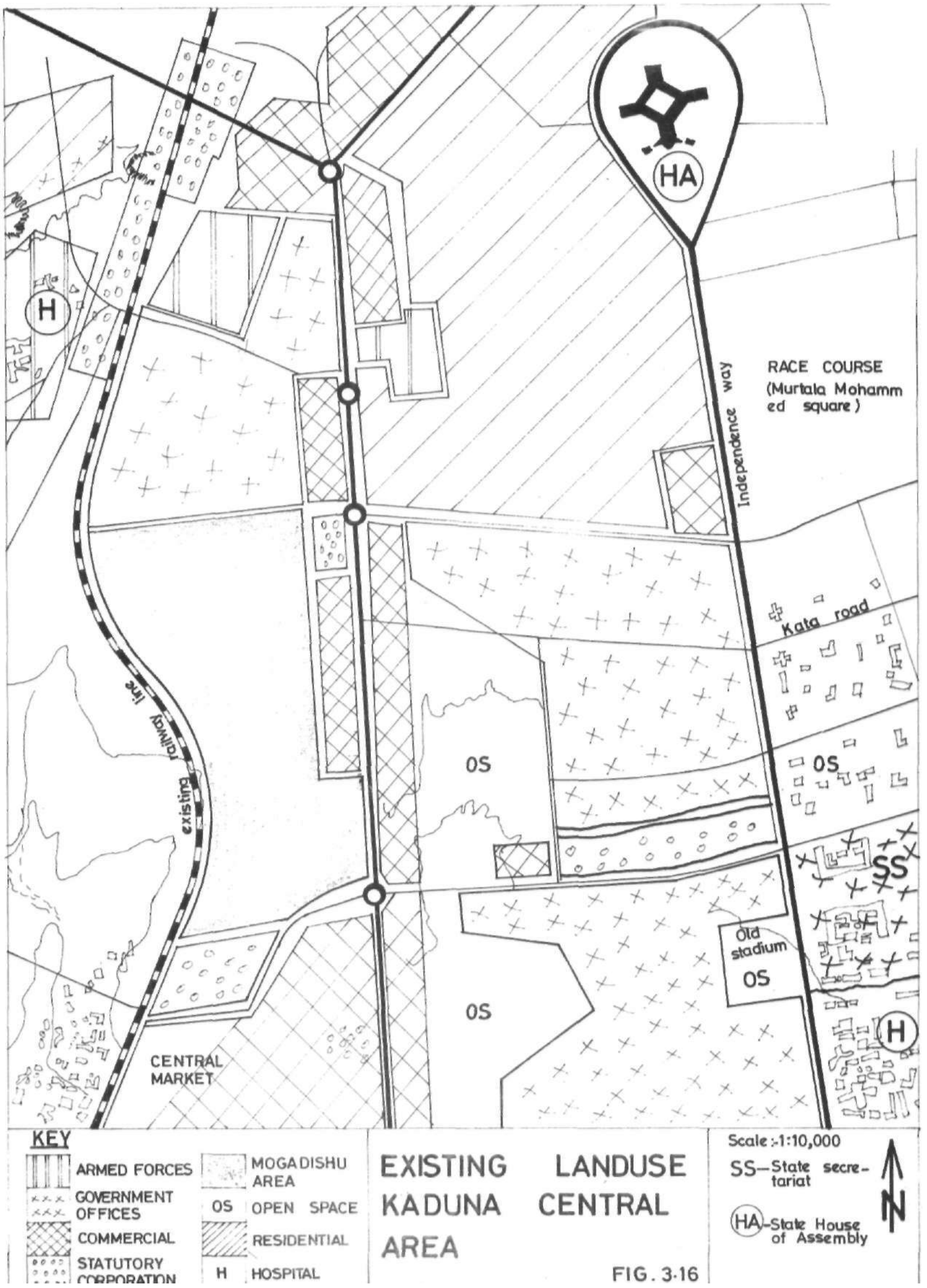
MaxLock proposal for public bus transportation was accepted by the Kaduna state government (then North Central State) and introduced bus service in 1974. Kaduna capital development board (KCDB) was established to plan and administer the service. However, this does not serve the people properly because of lack of defined parking spaces for the buses and planned bus routes.

2.60 Existing Utilities, Services and Facilities:

All the developments within the central area enjoy pipe borne water. Electricity is available to all buildings surveyed. Toilets are all of water closet. Sanitation within and around most buildings good. There is no refuse disposed system and no regular collection of dumps. Most buildings use their backyards as dumping ground. Few have incinerators. Lack of public toilets, telephones, post boxes; there is an urgent need for them. No health clinic or health centre within the central area. Only one friday mosque at the centre and this is inadequate Churches are also insufficient. present motor park for inter-state and intra-town adequate only needs better management and control.

2:70 Existing Landuse:

Kaduna is a town that has grown very rapidly on a site where land was in plenty. (fig 2.02). It has been observed that there is no economy of space in landuse pattern of Kaduna, the result is a loose and diffuse urban pattern with many undeveloped areas within allocated land. There is imbalance as far as distribution of uses between the two parts (North and South). Thus, commercial activity, social and administrative services and institutions are concentrated in the northern part, while the great majority of industrial work places are found in the southern part. Extensive areas allocated to the Armed Forces occupy the far northern end of the town. (fig 2.02). North and South is connected through the only main bridge across river Kaduna. Until recently a by-pass bridge [redacted]western side of the town. This constitute a traffic problem especially as a lot of traffic volume is generated between the two parts of the town as they have different functions that must necessarily interrelate with each other.


HA
H
RACE COURSE
(Murtala Mohamm ed square)
Independence way
Kata road
existing railway line
OS
OS
OS
SS
Old stadium
OS
H
CENTRAL MARKET
KEY
ARMED FORCES
GOVERNMENT OFFICES
COMMERCIAL
STATUTORY CORPORATION
MOGADISHU AREA
OS OPEN SPACE
RESIDENTIAL
H HOSPITAL
EXISTING LANDUSE
KADUNA CENTRAL
AREA
FIG. 3·16
Scale :-1:10,000
SS—State secre-tariat
HA-State House of Assembly
N

2.80 Previous attempts at designing city centre for Kaduna

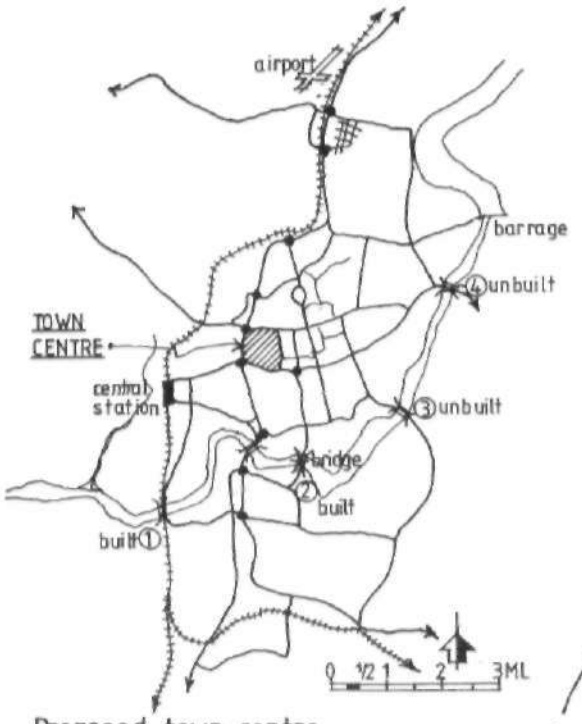
2.81 MaxLock Plan for City Centre:

(a) Evaluation of MaxLock proposal for city centre.

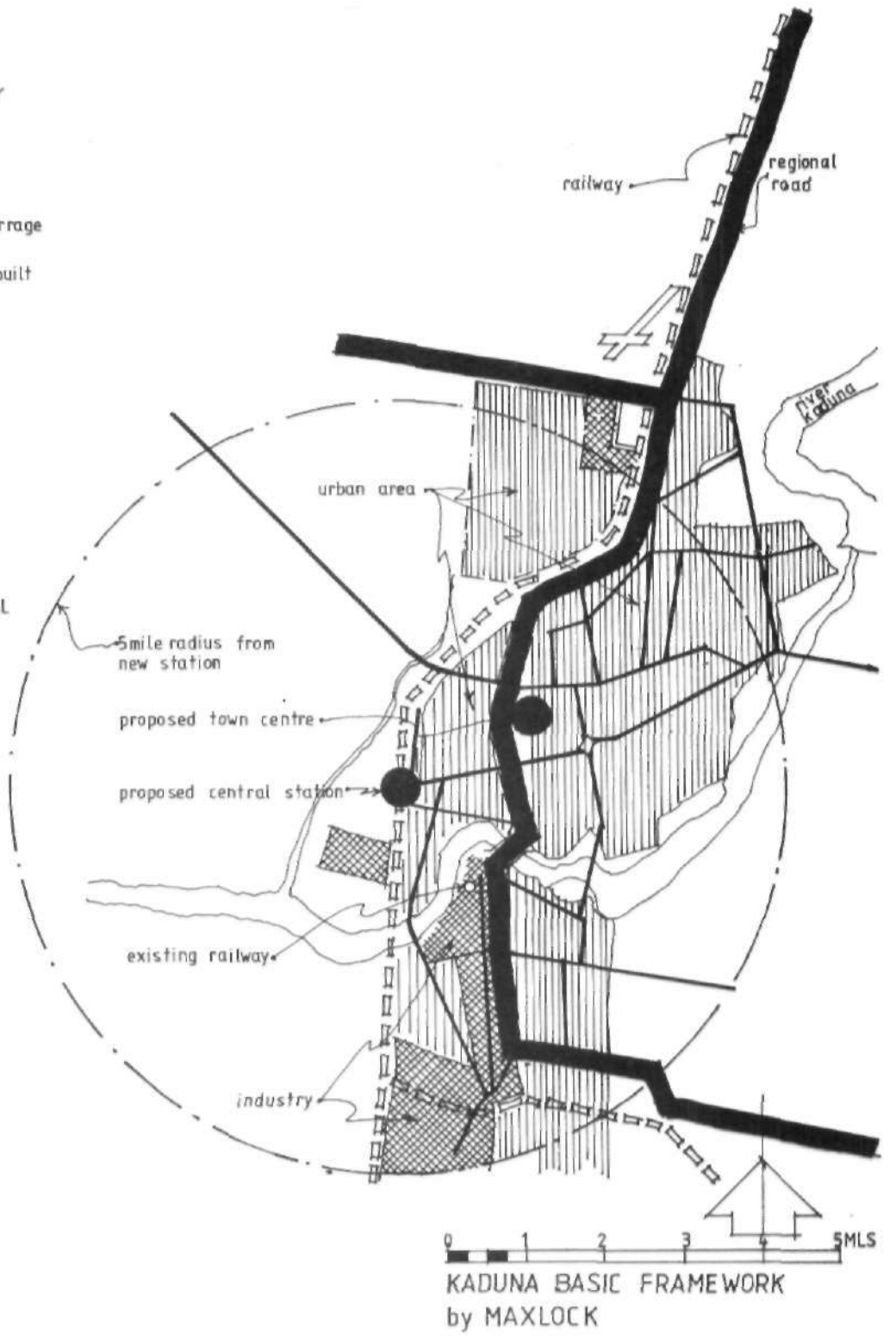
Lack of hierarchy of centres: The lack of district and community centres in Kaduna could explain for today crowded nature of the central area of the town. The single city centre plan brings all commercial activities into one part of the town. The three main zones (Garrison - Kaduna north, Government - central and industrial - South) could have been planned with their centres.

(b) Lack of East-West regional routes:

MaxLock proposal laid emphasis on the North-South routes only. The east-west routes were not considered. This would have helped to reduce the traffic congestion in the centre as traffic going east-west would have easy movements. With single city centre there should be quick evacuation of traffics from the central area.



Proposed town centre and bridge crossings by MAXLOCK



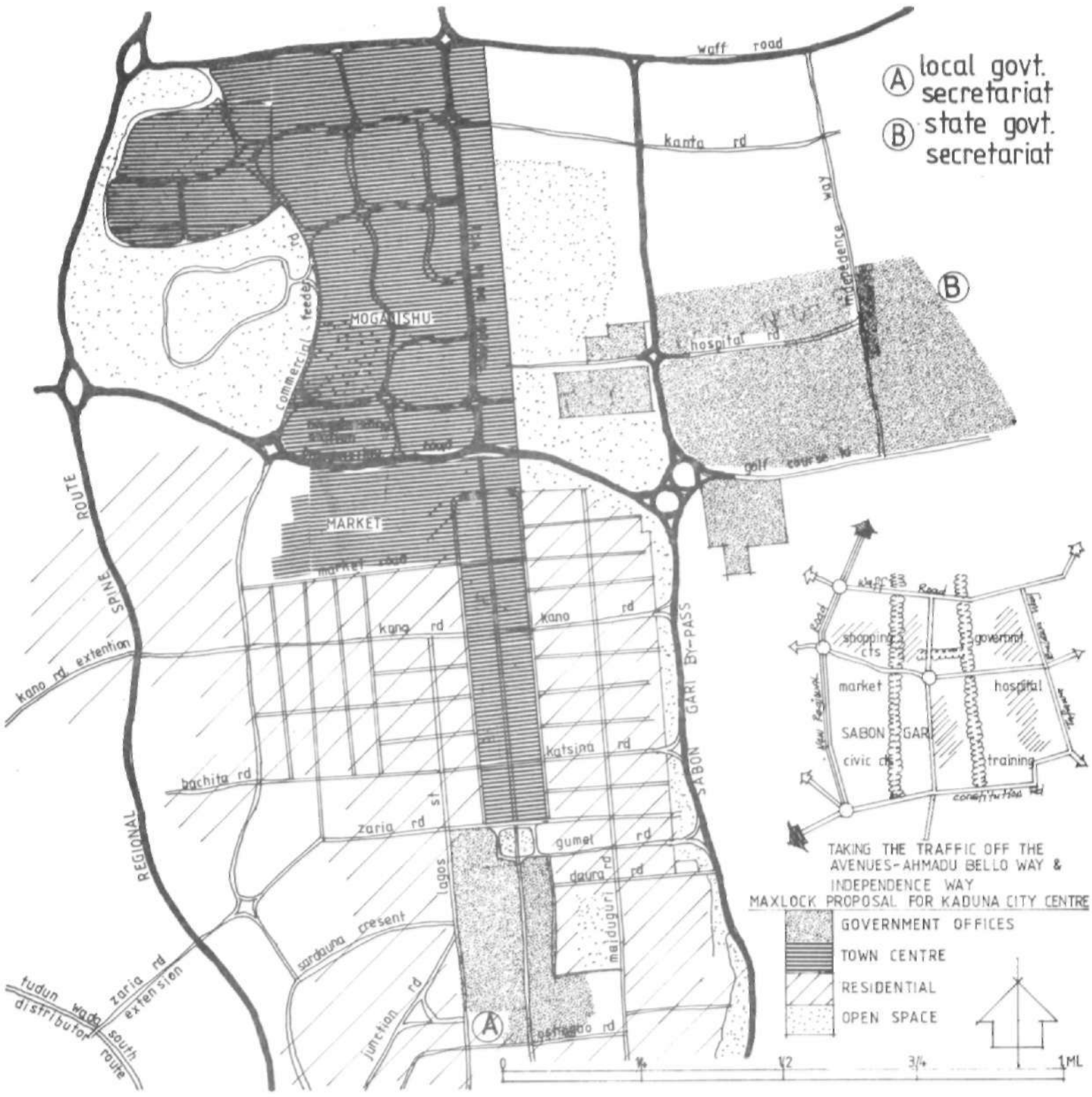
KADUNA BASIC FRAMEWORK by MAXLOCK

(c) Shopping malls:

The proposal of MaxLock to convert Ahmadu Bello Way, Independence Way and hospital roads to shopping malls is unattainable (see attached maxlock proposal for city centre). These streets are presently the main commercial streets of the town and the possibility of them being removed is remote. Since the two ways are the main North-South routes, there removal will create more chaos than convenience. These routes are better improved and left as they are and proposals made for new ones.

(d) Proposed city centre.

The proposed city centre was to grow along Ahmadu Bello Way and terminate at Zaria road. This lateral provision of commercial growth is poor. It will only further increase the existing problems along the central area. It would have been more preferred to have a central radial development.


waff road
Ⓐ local govt. secretariat
Ⓑ state govt. secretariat
kanta rd
way
Independence
Ⓑ
hospital rd
golf course rd
MOGADISHU
Commercial feeder rd
MARKET
market road
ROUTE
SPINE
kano rd extention
kano rd
kano rd
GARI BY-PASS
katsina rd
bachita rd
zaria rd
st
REGIONAL
gumel rd
daura rd
lagos
maiduguri
sardauna cresent
junction rd
Ⓐ
ostrogado rd
tudun wada distributor
zaria rd extension
south route
Waff Road
shopping cts
govertmnt
market
hospital
SABON GARI
civic ctr
training
TAKING THE TRAFFIC OFF THE AVENUES-AHMADU BELLO WAY & INDEPENDENCE WAY
MAXLOCK PROPOSAL FOR KADUNA CITY CENTRE
GOVERNMENT OFFICES
TOWN CENTRE
RESIDENTIAL
OPEN SPACE
0
¼
½
¾
1ML

(e) City Centre Outdated:

Whatever was the basis of MaxLock proposal, it is now outdated. The importance of the town has long changed from regional to state headquarters. The fast growing nature and increased city importance to the whole country has made it to assume roles that were never envisaged by MaxLock.

(f) Proposed 1-2 storeys height.

The proposed storey heights of between one and two will not functionally fit into the present needs and future requirements. Most functions will demand high rise buildings to intensify the utilisation of land.

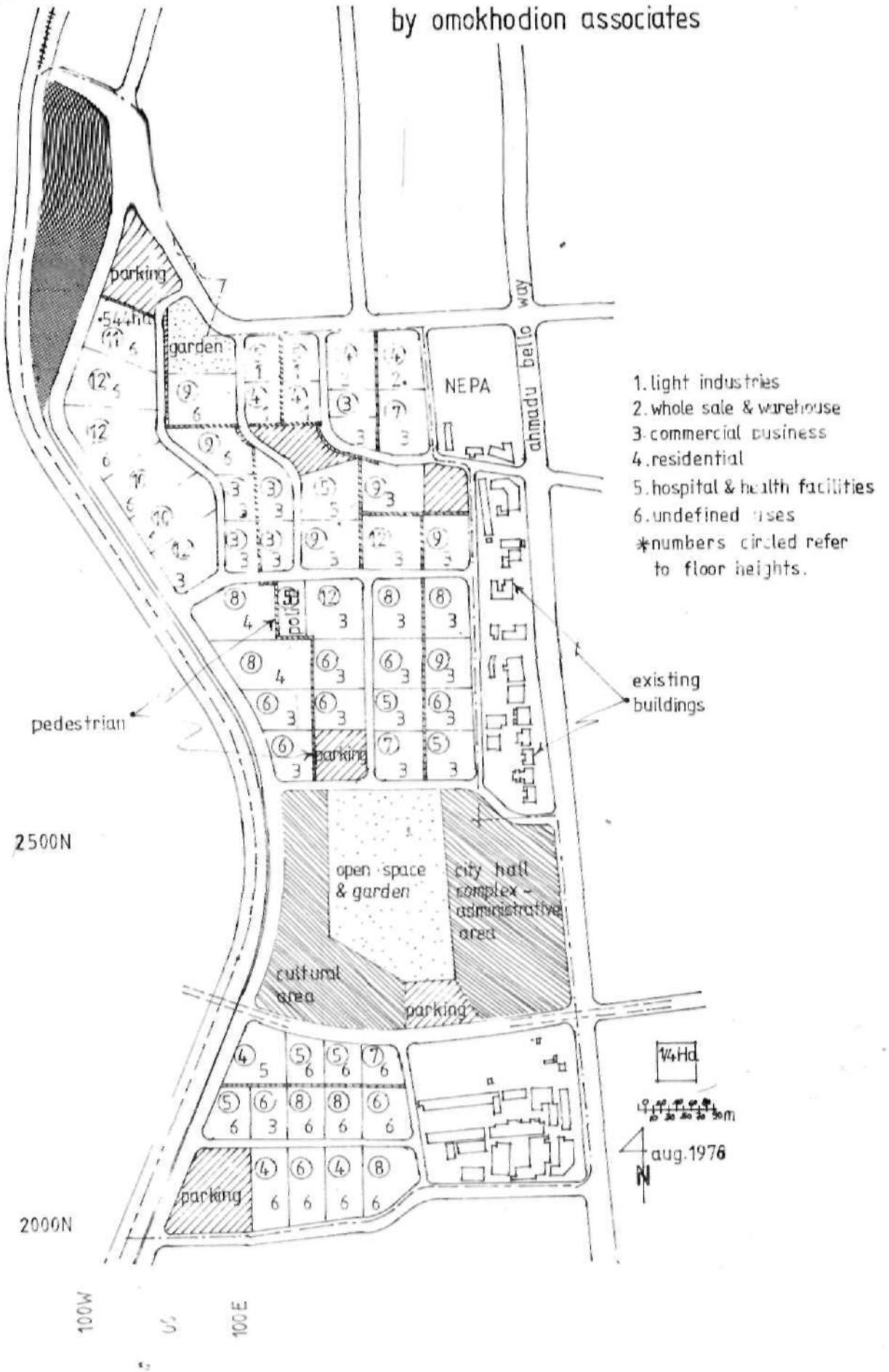
2.82 Omokhodion Proposal

Landuse Analysis of Omokhodion Proposal

Use	Area in Ha	% of total area
Gross plot Area (Commercial, business light industrial	22.10	38.20
Open Space	4.00	6.80
Administrative	3.60	6.10
Cultural	3.00	5.10
Roads & Railway	21.20	36.80
Parking	2.60	4.40
Others	1.50	2.60
TOTAL	58.00	100

KADUNA CITY CENTRE DEVELOPMENT

by omokhodion associates



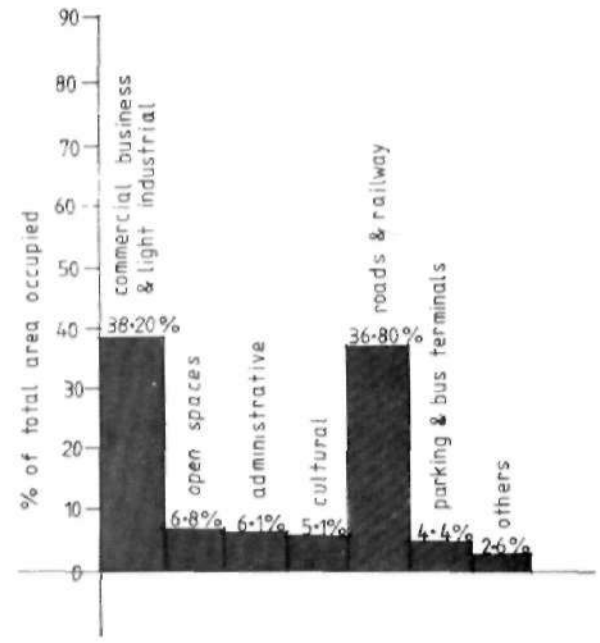
landuse analysis of OMOKHODION proposal for kaduna C.C.

USE	area in Ha.	% of total area
1. commercial & light industrial	22·10	38·20
2. open spaces	4·00	6·80
3. administrative	3·60	6·10
4. cultural	3·00	5·10
5. roads & railway	21·20	36·80
6. parking	2·60	4·40
7. others	1·50	2·60
TOTAL	58·00	100

mogadishu site = 48·00Ha.

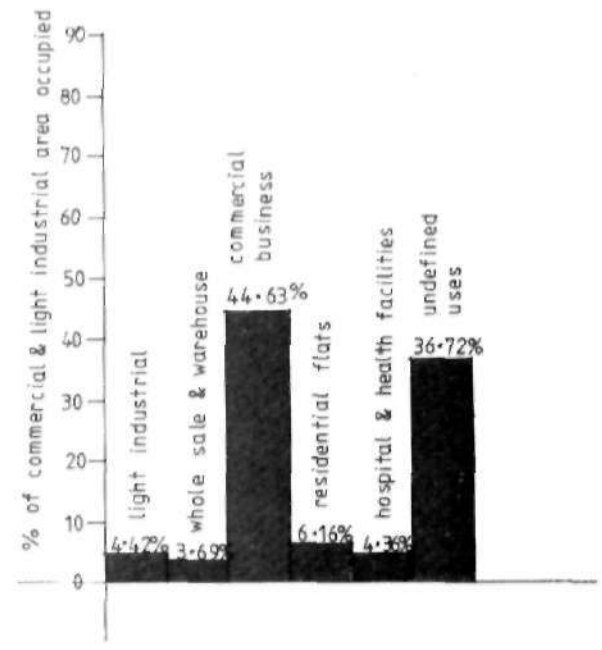
N.B.C. site = 10·00Ha

total site area = 58·00Ha



% distribution of gross plot area for commercial & light indust.
total gross plot area for commercial & light indust. = 22·10Ha.

uses	area in Ha.	no of floors	% gross commer. area
1. light industries			
a. printing press	0·247	5	4·42
b. workshp. & tailor	0·247	4	
c. bakeries	0·247	5	
d. dry cleaning & electronics	0·247	4	
2. wholesale shops	0·420	4	3·69
b. warehouse	0·405	—	
3. commercial			
a. cinema	0·410	3	44·63
b. offices, banks showrms & shps.	7·027	3-12	
c. supermarkets &dept. stores	1·332	3-7	
d. hotel	0·877		
e. restaurant & snack bars	0·321	6	
4. residential flat	1·377	8	6·16
5. hospital	0·490	4	4·36
b. health facilit.	0·485	5	
6. undefined uses	8·210	4-12	36·72



% of distribution of gross plot area for commercial and business to different activities.

Total gross plot area for commercial and Business = 22.333Ha.

Light industries	Area in Ha.	No. of Flors	% of gross commercial and Business area
a. Printing Press	0.247	5flr.)	
b. Workshops & Tailoring	0.247	4flr.)	
c. Bakeries	0.247	5flr.)	
d. Dry Cleaning and Electronics	0.247	4flr.)	
TOTAL	0.988		4.42%
2a. Wholesale Shops	0.420	4flr.	
b. Warehouse	0.405		
TOTAL	0.825		3.69%
3 . Commercial Business			
a. Cinema	0.410	3flr.	
b. Offices and Banks	7.027	3-12flr.	
c. Supermarket and Departmental stores	1.332	3.7flr.	
d. Hotel	0.877	6-12flr.	
e. Snack bar and Restaurants	0.321	6flr.	
TOTAL	9.967		44.68%

4. *Residential*			
a. Residential Flats	1.377	8flr.	
TOTAL	1.377		6.16%
5. Hospital & Health Facilities.			
a. Health Facilities	0.485	5flr	
b. Specialist Hospital & pharmacist	0.490	4flr.	
TOTAL	0.975		4.36%
6. Undefined Uses	8.201	4-12flr.	
TOTAL	8.201		36.72%
	22.333Ha		100%

2.82 Omokhodion Proposal for city centre:

Evaluation of Omokhodion proposal and reasons why proposal was dropped. The Omokhodion proposal for Kaduna city centre was rejected on a number of grounds: (a) planning aspect - the planning did not take into account a number of issues including the lack of co-ordination of the city centre with the whole town; (b) problems of implementation; (c) economic reasons and (d) political ideology.

A: Planning Aspect:

(i) Duplication of Uses:

The Omokhodion proposal did not take into account the whole town in terms of allocating the central uses. Existing functions like the Ahmadu Bello Stadium which is large enough for the whole city do not need another of similar size in the city centre. The old stadium is still very much in use in case of many sporting activities taking place in the town this can be used. This means that for the foreseable future need for a large stadium will not arise. However, there is the need for a Gymnasium and indoor games/sports hall to cater for some of the sporting activities which are lacking presently in the

Ahmadu Bello Stadium. A large area of about 6.1% of the whole site is being allocated to the administrative and city hall complex. Both houses of assembly (the state assembly and the local government offices) are presently being adequately housed, so there is no need for a governmental secretariat or complex as proposed in the Omokhodion design. Space allocated to cultural area - 5.1% of whole site is very generous considering the fact that functions like museum, already existing though not to expected standard. A more rational space allocation would suffice.

(ii) Lack of proper distribution of landuses within city centre: (see attached proposed Omokhodion landuse)

The light industries and warehouses are being concentrated to the northern part of the site does not functionally interrelate with the existing market. Southern part of the site would have been more appropriate. Gardens and open spaces are well removed from the residential areas. Residences will have to walk long distances across vehicular roads to get to any of the two gardens. This is not only dangerous but also inconvenient. A long streched open space and garden going through the residence would have been more suitable.

From the landuse proposal, it shows as if the overall land was just subdivided into plots without much thought to their uses and their functional interrelationship with one another. Roads were designed with plots carved out typically as the usual government land allocation in the town and not as if dealing with a city centre which is the heart and therefore needs more special handling and proper land utilization and functional interrelationship not only within the central area alone but with cognisance to the whole city. 36.72% of the commercial and business area was allocated to undefined uses. This shows how the proposal was unsure of the landuse allocation or there was too much land available to her and therefore must be filled with what; it was not [redacted]. The lack of proper analysis of landuse requirements must have led to this.

Commercial businesses are distributed along side the motor roads, thus repeating the same thing along Ahmadu Bello Way where pedestrians shop along dangerous vehicular ways.

(iii) No defined and safe pedestrian Walkways:

Pedestrian ways within the city centre are not properly defined and not safe. Subdivided plots have to their backyards pedestrian routes passing through with the frontage being bounded by motor roads. How impossible this will be can be seen from the present commercial areas in the town. Where such provisions are turned into sanitary grounds. No pedestrian underpass or overhead bridges where the two routes meet. Pedestrian routes do not go through the whole city centre. It is distributed within few areas only. For example, one leaving the southern parking lot have no defined route that takes him to the commercial areas in the centre. Pedestrians routes of 2.0m width are narrow and could lead to criminal areas.

(iv) Technical ability:

The technical ability of the country to meet the standard provided is doubtful. From the model (the model bears the original concept of the plan; the plan layout in this report have the floor heights reduced by the government. So the two will not read the same however the model plan will be discussed) which has the lowest high-rise building of 10 floors

and rising as much as 30 floors in some places is too ambitiously designed. High rise buildings occupy about 85% of the plan with 25-30 storeys predominant. They are mostly designed in the new styles of glass curtain walls rising to these heights. Glass high-rise buildings even in western countries are new trend of design and not easy to build as it requires high skill labour. To achieve these buildings in Kaduna would have meant importing these building materials "custom-built". The cost one is left to imagine. Revolving restaurant could be seen at such great heights. The question is maintaince and technical experts to keep these sophisticated things going.

On viewing the whole model it gives one the feeling of "high-tech" akin to western countries. Infact closing the title of the project below one is tempted to think that this is a city centre developed for a suburb of Manhattan - New York. This high level of technology expected will not be achieved hence, the need to redesign for a more modest scale.

(v) Vehicular Traffic:

Roads run through the whole site in different directions in quite an unpleasant manner making the whole city centre loose her quality. This dangerous and unpleasant vehicular traffic makes for the same mistake of the present central area where vehicles and pedestrians all struggle along. The roads are too numerous and not functionally designed. Too many junctions could be dangerous points. 36.8% to roads and railway very high percentage of vailable land for otherwise profitable uses. Parking and bus terminals 4.4% of total area are few and scattered all over without proper functional relationship. Pedestrian crossing to parking pools not defined.

(vi) Green Spaces:

The green spaces are not functionally integrated to the city centre as a whole. They are disjointed and not continous. The pedestrian ways would have been designed as part and parcel of the green spaces as a whole. No open playground for the residential plots. 6.8% of site allocated to open spaces is very small. There should have been a more generous allocation to open spaces.

B: Problem of Implementation

(i) No define responsibility:

The city centre plan proposal was submitted to the State Ministry of Lands and Survey and left to go through the usual governmental procedures. There was no defined responsibility as to who will implement the proposal. The implementation was allow to go through the Ministry as if it were a master plan - which takes long time.

(ii) No management board:

The lack of a management board to oversee the implementation and the management further made the implementation impossible.

(iii) Government Laxity:

The government non participation in terms of formulating governing bodies and strong policies regarding the implementation led finally to the rejection of the proposal.

C: Economic Reasons:

(i) Lack of proper Revenue Management:

(a) There was no defined management body to advise the government on how money can be raised and invested in such huge project. Thus, the high cost

discourages the government from continuing with the proposal as it can not imagine from where the money can be got.

(b) Estimated cost of infrastructure was to be ₦35million as compared to expected revenue to be collected which is ₦0.5 million. The high imbalance of difference to be added ₦34.5million by the government just for infrastructure alone was unacceptable. Hence, the government looked at the project *as nothing but another unattainable exercise.*

(ii) The land tenure system of Northern Nigeria which governs plot allocation within the Northern states does not favour high charges of fees for plots. This makes it difficult for the government to charge high fees so as to collect enough revenue for execution of the project. For example if there were 1,000 plots and government charges ₦½million for each plot the sum of ₦500 million will be realised. This is substantial enough to develop the site, provide all the needed infrastructure and have enough money to execute some other projects. This system could have *attracted limited land speculators.*

D: Political Aspect:

Two main political aspects were involved in stopping the implementation of the Omokhodion proposal: (i) party politics and (ii) Regional politics.

(i) Party Politics:

The Omokhodion proposal of 1978 was commissioned and finished during the military regime. After the handing over of power in 1979 to civilian administration there came a different political ideology. The new civilian administration was not in favour with the way in which the whole site was subdivided and allocated to individuals. The civil administration felt that this was a capitalist way of exploitation and that the site should be acquired by the government and developed for general benefit of the public. That is there should be no individual plots, all the land will be vested in the hand of a management body to develop, run and maintain the whole site according to the development plan solely for the purpose of making profit which will be re-invested to the interest of the public. Omokhodion proposal was based on the idea of individual plot allocation. Hence, with this new ideology his plan became outdated, therefore the need to re-plan the site.

(ii) Regional Politics:

(a) National Context:

Within the national context Kaduna was the capital of the former northern region. For this reason people from the northern part of the country felt that the bulk allocation of plots should go to those from the northern states as opposed to the allocation where ove 60% of the plots went to non northerners. For this reasor some felt that the allocation was faulty.

(b) Regional context:

Within the 10 Northern States, Kaduna State is one. Those from Kaduna State where of the feelling that the larger share of plots in Mogadishu should go to them as against the present 75% that went to non-state indegenes. The indegenes felt since this is their state they should have the lion share. This is another area of disagreement with the plot distribution

(c) State Context:

Within the Kaduna State hereself there were disagreement. Those from former Zaria province which comprises of Zaria area Kaduna metropolitan and Jama'a area felt they

have more right over Kaduna than any other part of the state since Kaduna was part of their province. As such, they expected that within the state they should have the lion share of the plot allocation. On the contraty, people from Katsina province had well over 80% of the plots allocated to Kaduna State indegenes i.e. the bulk went to non Zaria province indegenes. This to the minds of Zaria province people was faulty.

All these strong political issues contributed to the impossible implementation of ' Omokhodion proposal for Kaduna city centre.

CHAPTER 3

3.00 Surveys

3.10 Traffic Surveys

3.20 Landuse Surveys

3.30 Estimated population of town and Residential areas.

3.40 Expected size of city centre

3.50 Identification of various alternative concepts of city centre designs

3.60 Site analysis

3.70 Schedule of Requirements.

CHAPTER 3: 3.00 Surveys

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3.60 Site analysis

3.70 Schedule of Requirements.

3.10 Traffic Surveys:

A 12 hour (6. a.m to 6 p.m) traffic volume and O.D. survey was carried out at Kaduna central area along Ahmadu Bello Way, Hospital road, and N.B.C. roads (fig 3.01) from Friday the 23rd April, 1982 to Tuesday the 27th April, 1982 Days chosen for surveys includes Friday, Saturday, Monday and Tuesday. These days were chosen so as to get the maximum traffic attracted to the centre during week-ends (friday and saturday) and working days (Monday and Tuesday) (fig 3.01 - 3.14). Considering the town vehicular movements five stations were selected for the survey. These stations

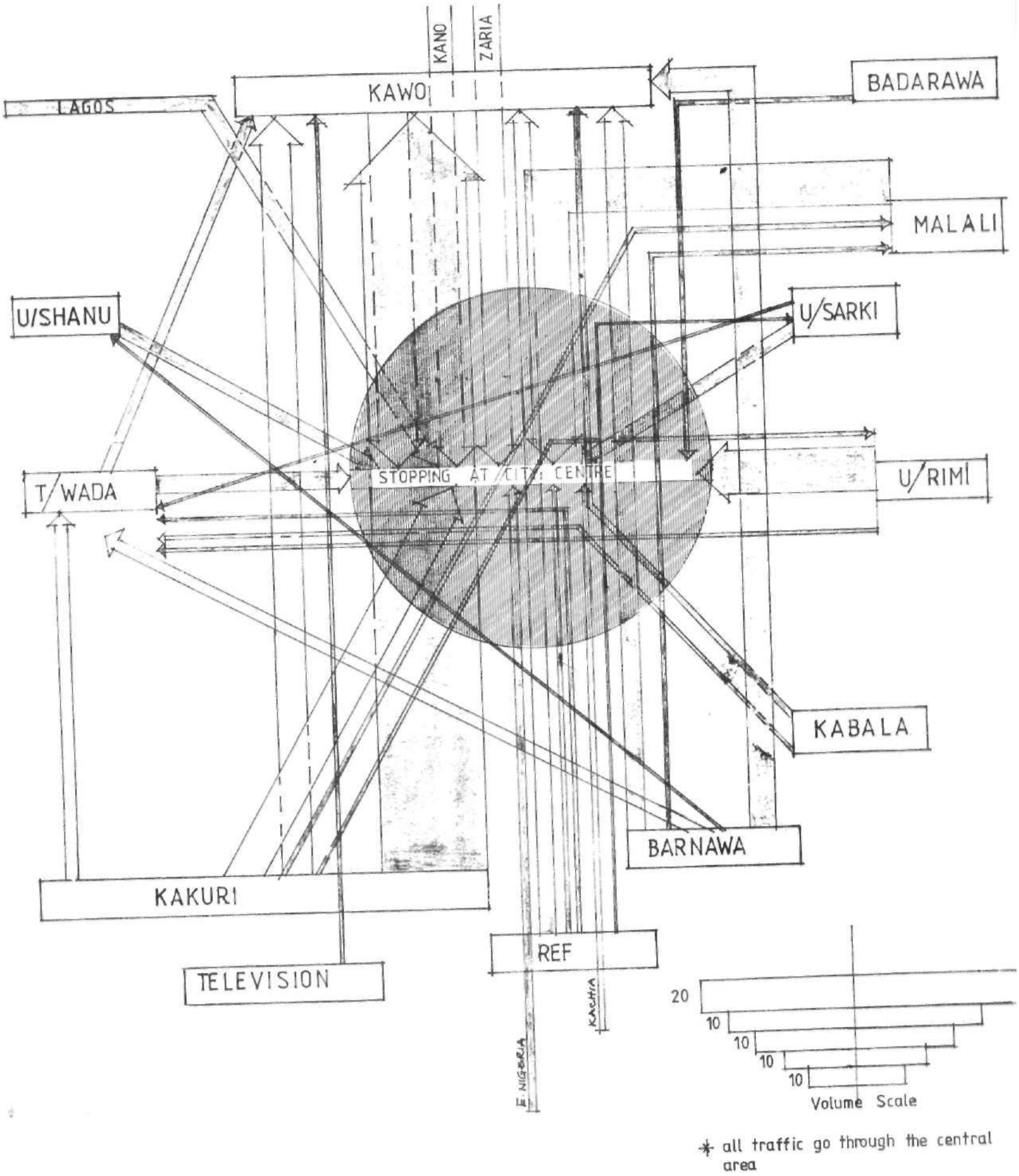
were: Station I on Ahmadu Bello Way to the north, Station 2 on Ahmadu Bello Way to the south; Station 3 on hospital road to the market; station 4 on hospital road to the post office and station 5 across Mogadishu site (fig 3.17).

The survey (volume count) on all the five stations included all types of vehicles categorised under five broad groups - (a) car, Taxi, Mini-bus, light van and Animals; (b) Tractors, Trucks and Animal driven carts; (c) Busses (large), Trailer and Trucks and (d) motorcycles and (e) Bicycles. The passenger car unit (P.C.U) values of above 5 categories is 1.00, 2.00, 3.00, 0.75 and 0.33 respectively.

Traffic Volume:

Considering the traffic volume Ahmadu Bellow Way appear to be the most busiest with traffic volume reaching 5,407 p.c.u on Friday (23/4/82) and 4,106 pcu on monday 26/4/82) see fig 3.01 - 3.13.

Station 1: On Ahmadu Bello Way towards north holds maximum hourly traffic volume ranging from 3,503 pcu to 4,070 pcu (fig 3.01-3.04). This holds the second largest traffic volume.



Termination And Trough Traffic At Kaduna Central Area (6:00am – 6:00pm)

source : field survey – april 1982

FIG. 3·01

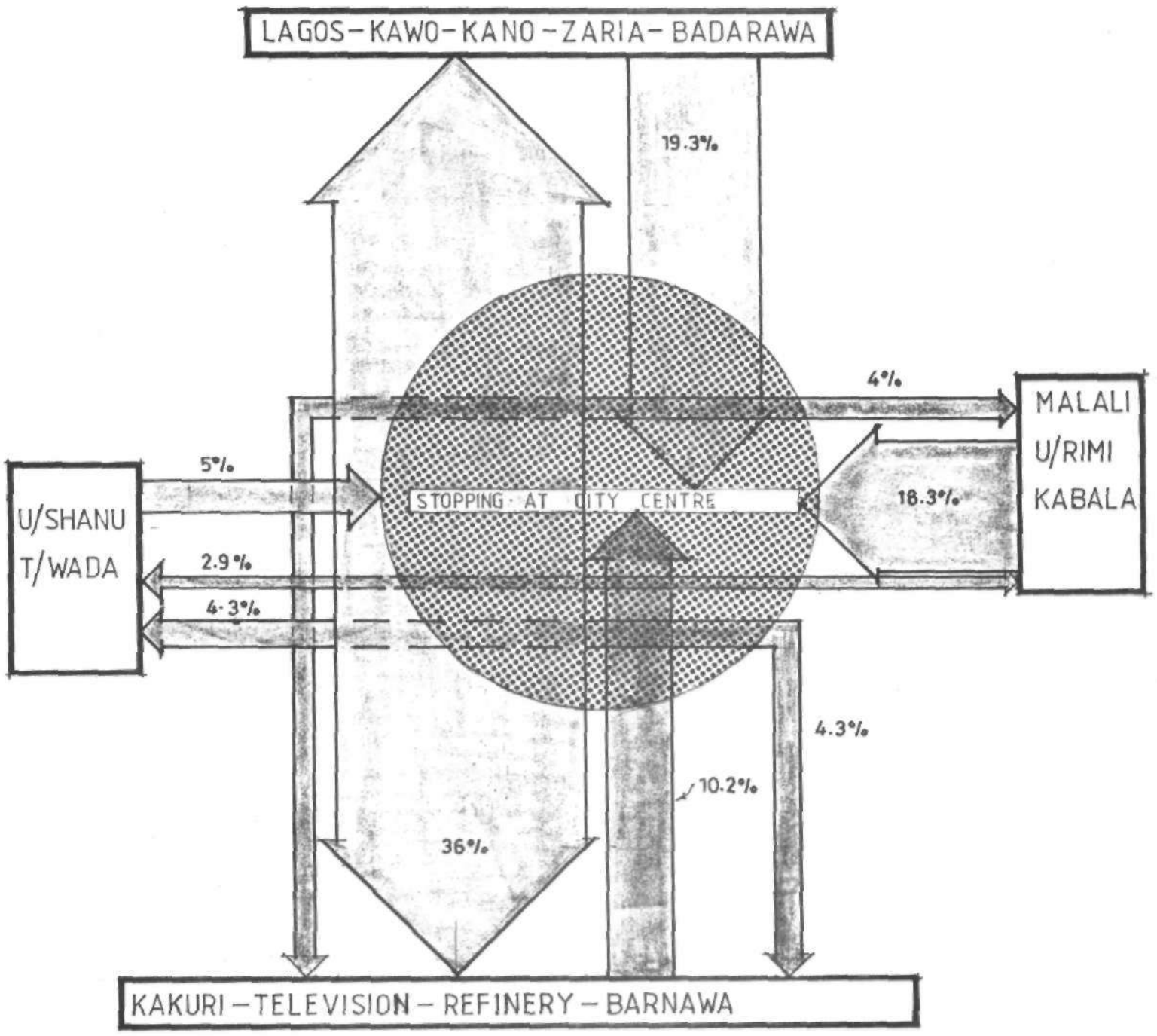
Station 2: On Ahmadu Bello Way towards south holds maximum hourly traffic volume ranging from 3,851 pcu to 5,407 pcu (fig 3,05 - 3.08). This holds the largest traffic volume.

Station 3: On hospital road towards market holds maximum hourly traffic volume ranging from 1,095 pcu to 2,113 pcu (fig 3.09 - 3.10) This holds the 4th largest traffic volume.

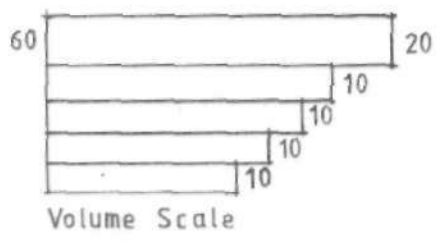
Station 4: On hospital road towards post office (eastwards) holds maximum hourly traffic volume ranging from 951 pcu to 1,832 pcu (fig 3.11-3.12). This holds the 3rd largest traffic volume.

Station 5: Across Mogadishu site. Route created by Taxi and bus drivers. Holds maximum hourly traffic volume ranging from 64 pcu to 483 pcu. This is the station with the lowest traffic volume (fig 3.13)

Peak Hours: Morning peak hour varies from station to station It is 9 -10 at station 1 except monday when it is 7-8 a.m at station 2 it varies between 8-11 a.m (fig 3.05-3-08) at station 3 it is betwen 9-12 p.m; (fig 3.09-3-10); at station 4 it varies between 9-12 noon (fig 3.11-3.12) and at station 5 it is between 10-12 noon (fig 3.13)



* all traffic go through the central area



Summarised Termination And Through Traffic At Kaduna Central Area (6:00am - 6:00pm)
source: field survey - april 1982

FIG3-02

Composition of Traffic:

On hospital road, the buses and Taxis predominant. This is because they are either coming from the motor park or going to the mortor park which is within the market. Heavy flow of traffic is along Ahmadu Bello Way with taxis and private cars predominant followed by trucks and large buses.

Origin and Destination:

On all the five stations mentioned earlier there was origin and destination survey conducted for 12 hours (6:00 am.-6:00 p.m) for all the incoming and out going vehicles. The results are summarised as follows:-

Traffic across central area:

(1) 36% of traffic crosses the central area from Kakuri Television, Refinery and Barnawa areas in the south to Kawo, Kano, Zaria, Badarawa and Lagos areas in the north and vice versal. This is the highest amount of through traffic in the centre.

ii) 4.3% of traffic from Kakuri, television, refinery and Barnawa crosses the centre to Tudun Wada and Unguwar Shanu and vice-cersal. This is the second largest amount of through traffic.

(iii) 4.0% of traffic leaves Malali, Unguwar Rimi, Kabala (on the east) across the centre to Kakuri, television, Refinery and Barnawa on the south and vice versal. The third largest amount of through traffic.

(iv) 2.9% traffic crosses the centre from Unguwar Shanu and Tudun Wada to Malali, Unguwan Rimi and Kabala and vice versal. This is the fourth largest amount of traffic that goes through the central area of the town.

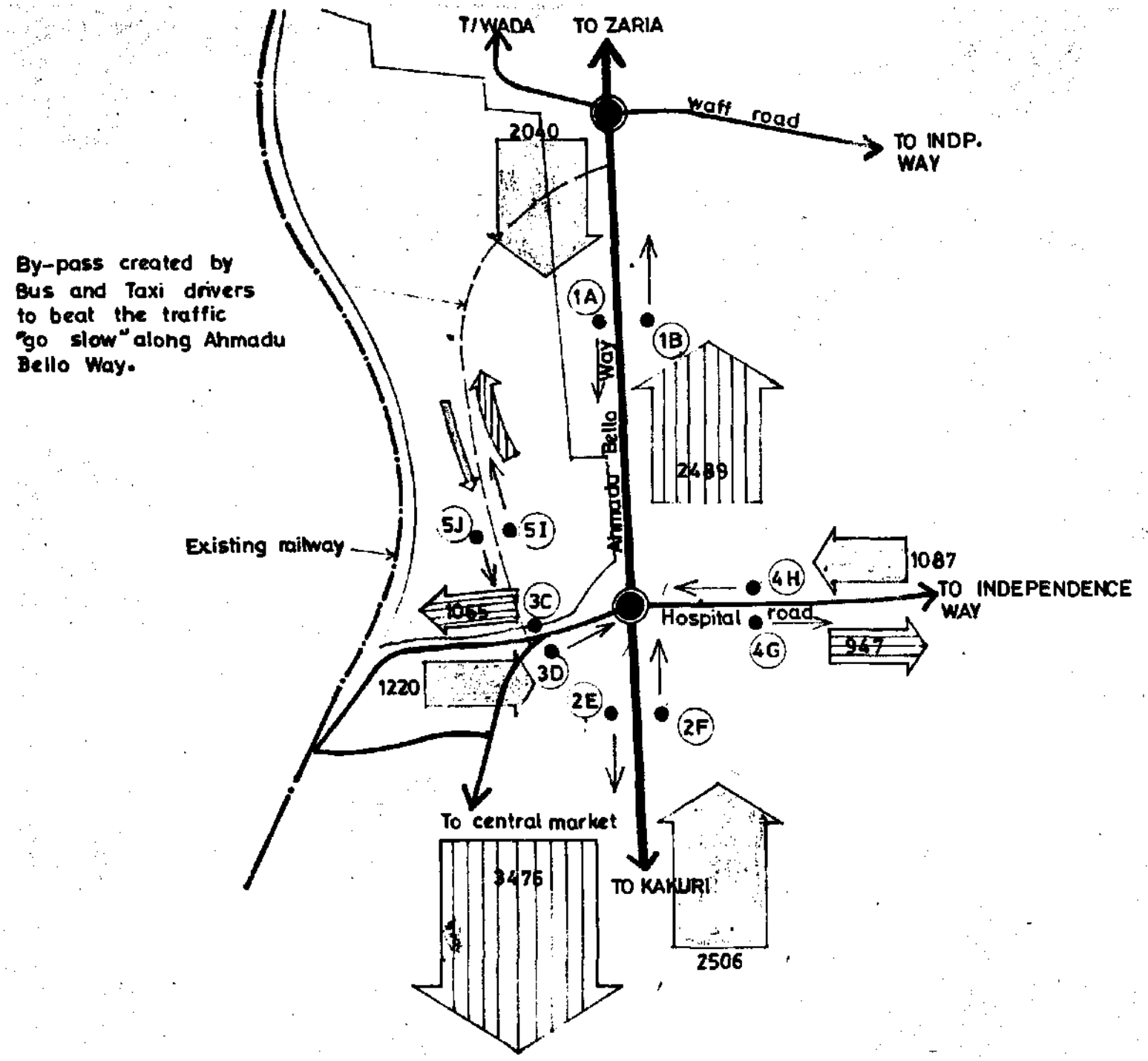
Total of 47.2% of all the traffic actually goes through the centre to other parts of the town or to other towns.

Terminating traffic at central area:

(i) 19.3% of traffic leaves Kawo, Badarawa, Zaria, Kano and Lagos and terminates at the central area. This region carries highest percentage.

(ii) 18.3% leaves Malali, Unguwan Rimi and Kabala (eastern side) and terminates at centre. Second highest percentage.

(iii) 10.2% traffic leaves Kakuri, television, refinery and Barnawa then terminates at centre. The third largest amount of terminating traffic.



(ZE) Numbers circled refer to station points.

Mogadishu site

Scale 1:10,000

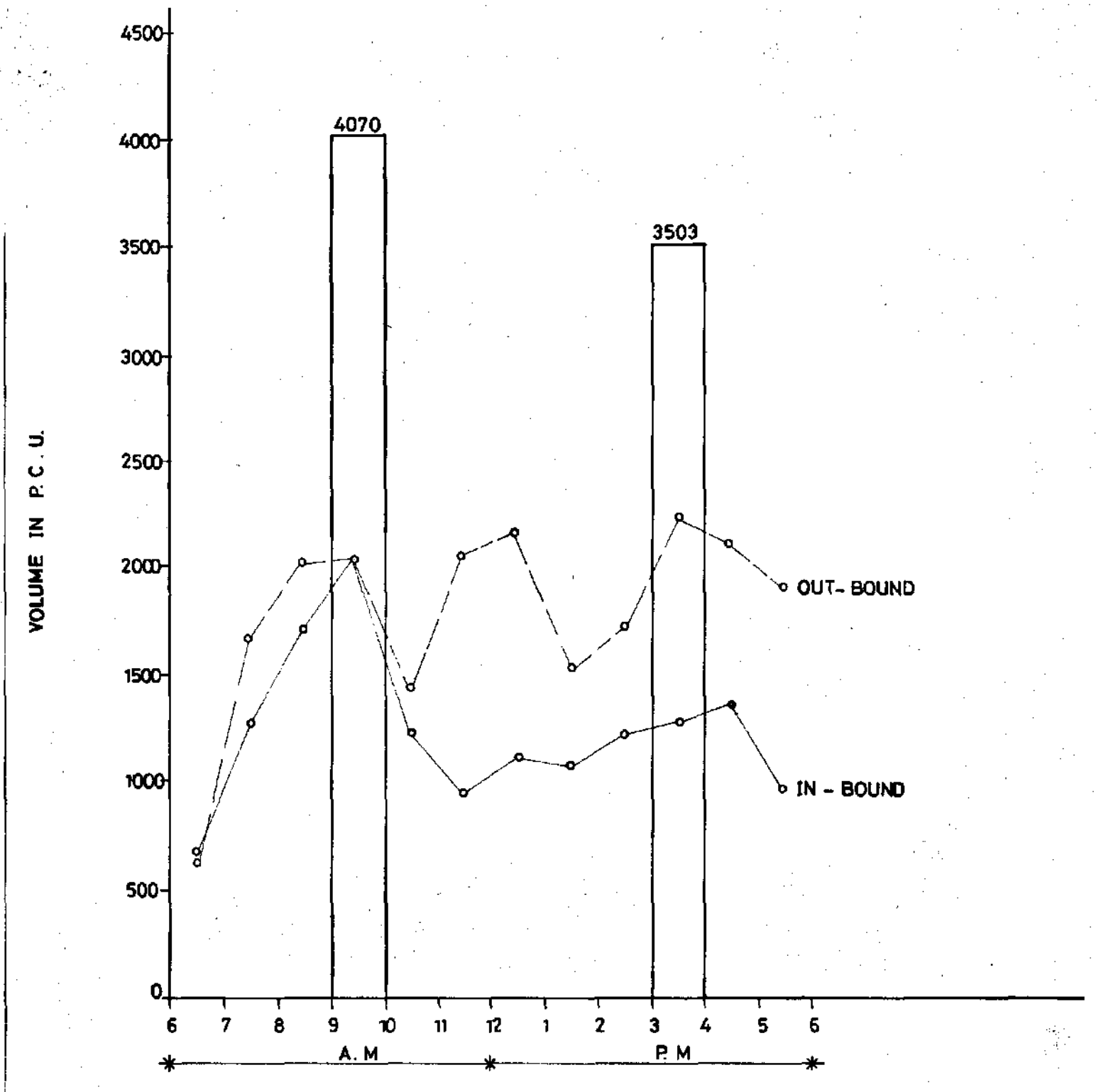
2500 2000 1500 1000 500 0

N

Source:- Field survey — 1982

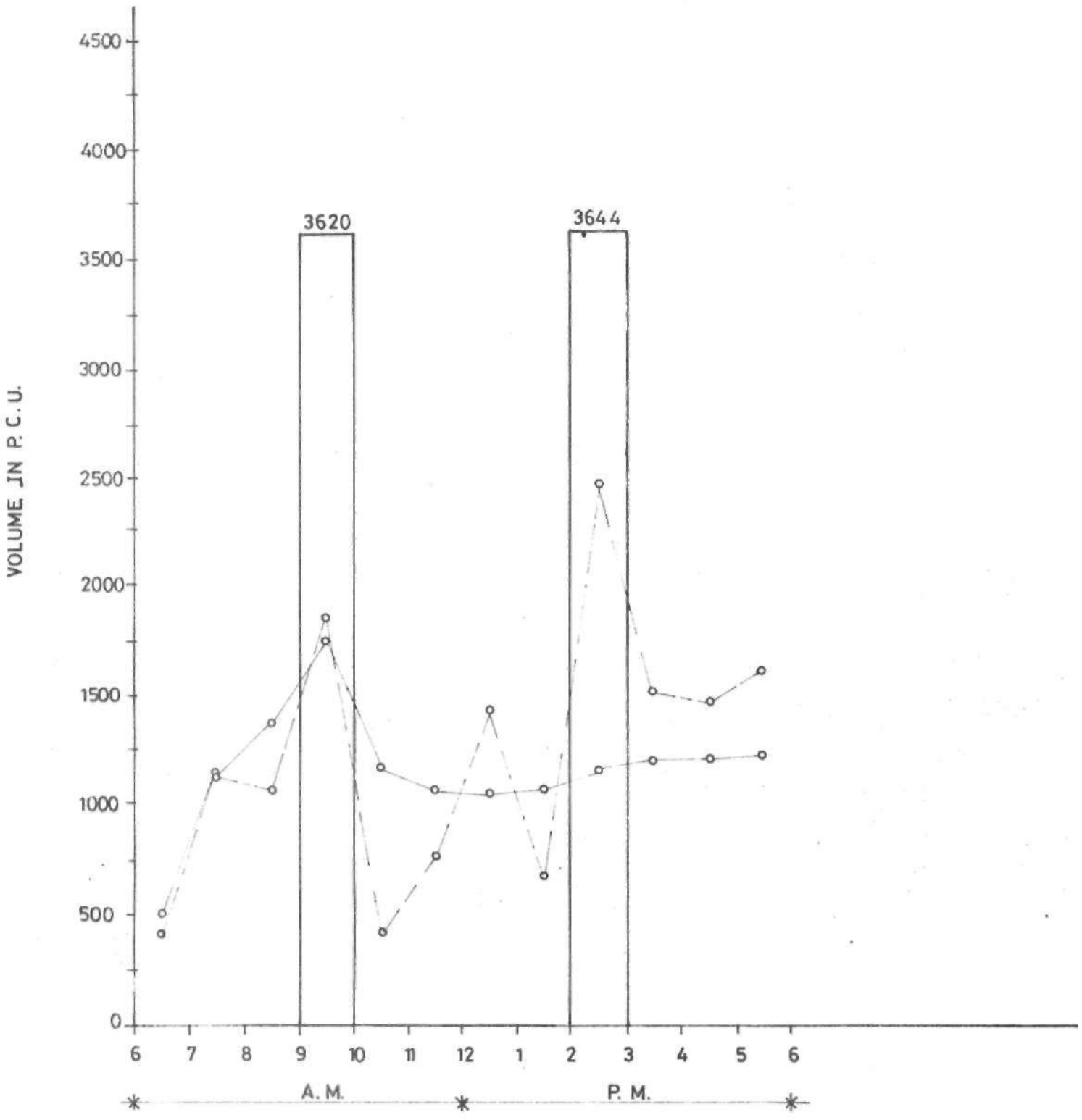
PEACH HOUR VOLUME OF TRAFFIC IN P.C.U. AT KADUNA CENTRAL AREA.

FIG. 3·17



Traffic survey at Kaduna central area (Station 1-Friday 23/4/82)
Source :- Field survey - 1982 (April)

FIG. 3·01



Traffic survey at Kaduna central area (Station 1 - Saturday 24/4/82)
Source :- Field survey - 1982 (April)

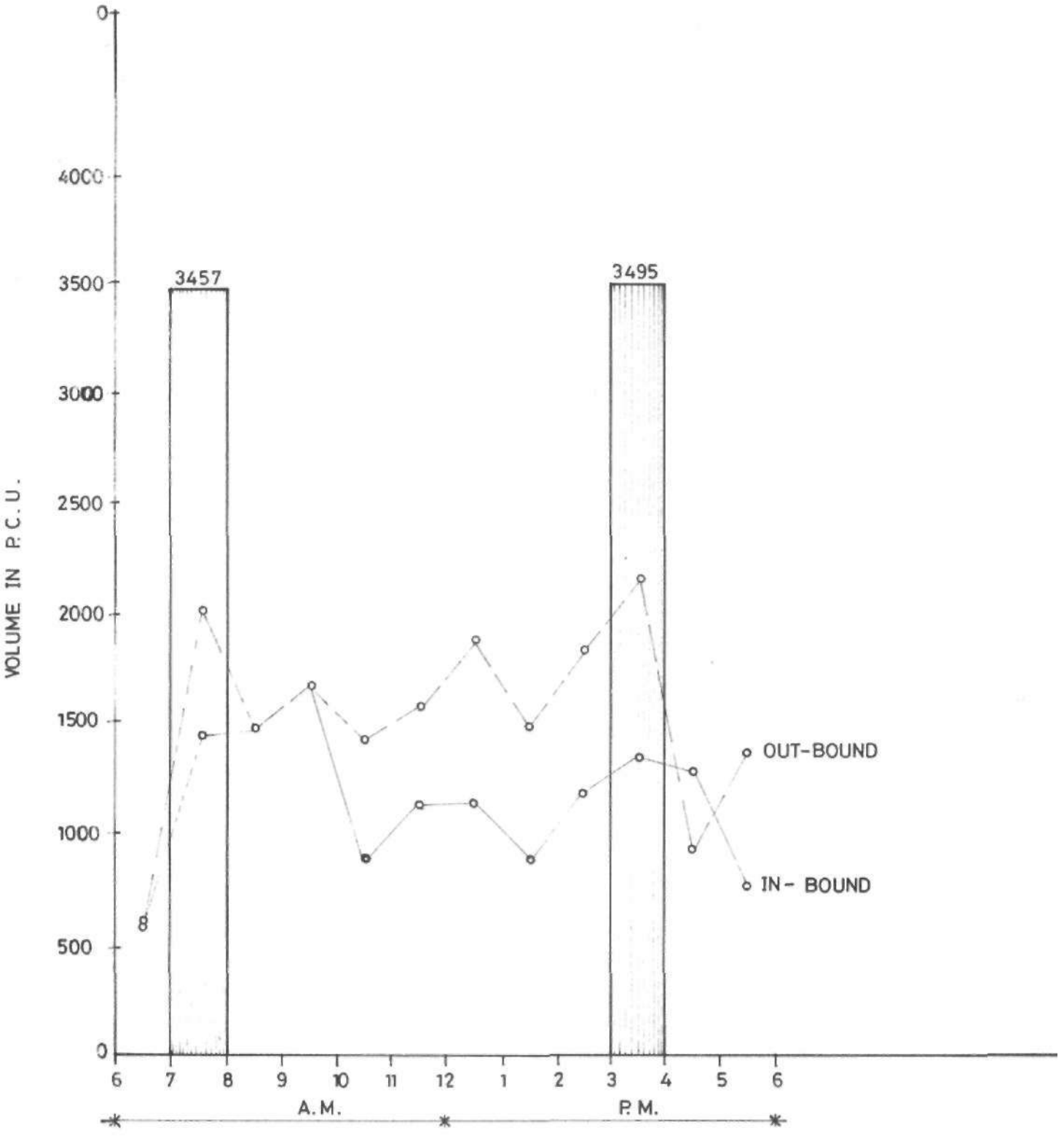
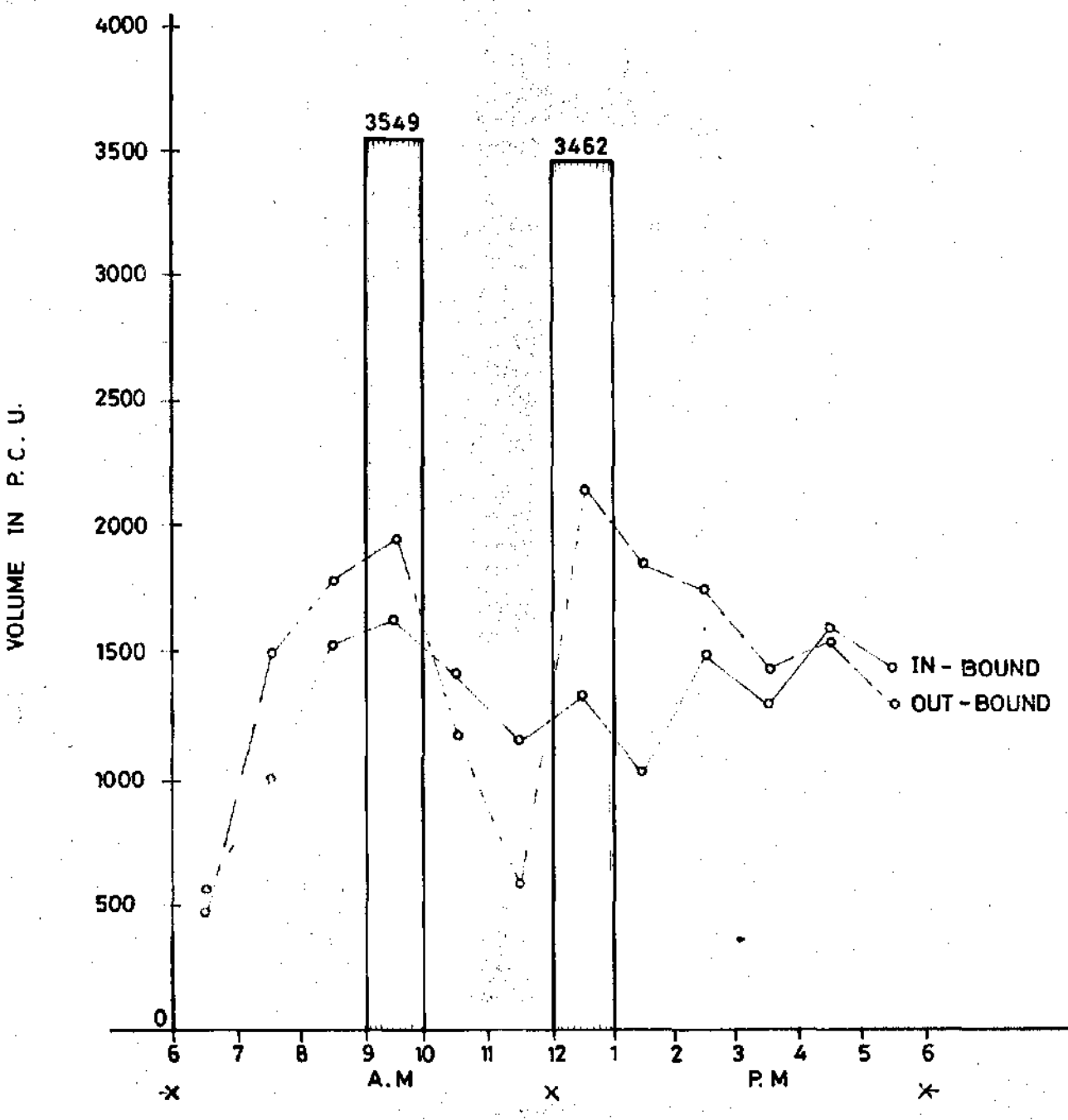
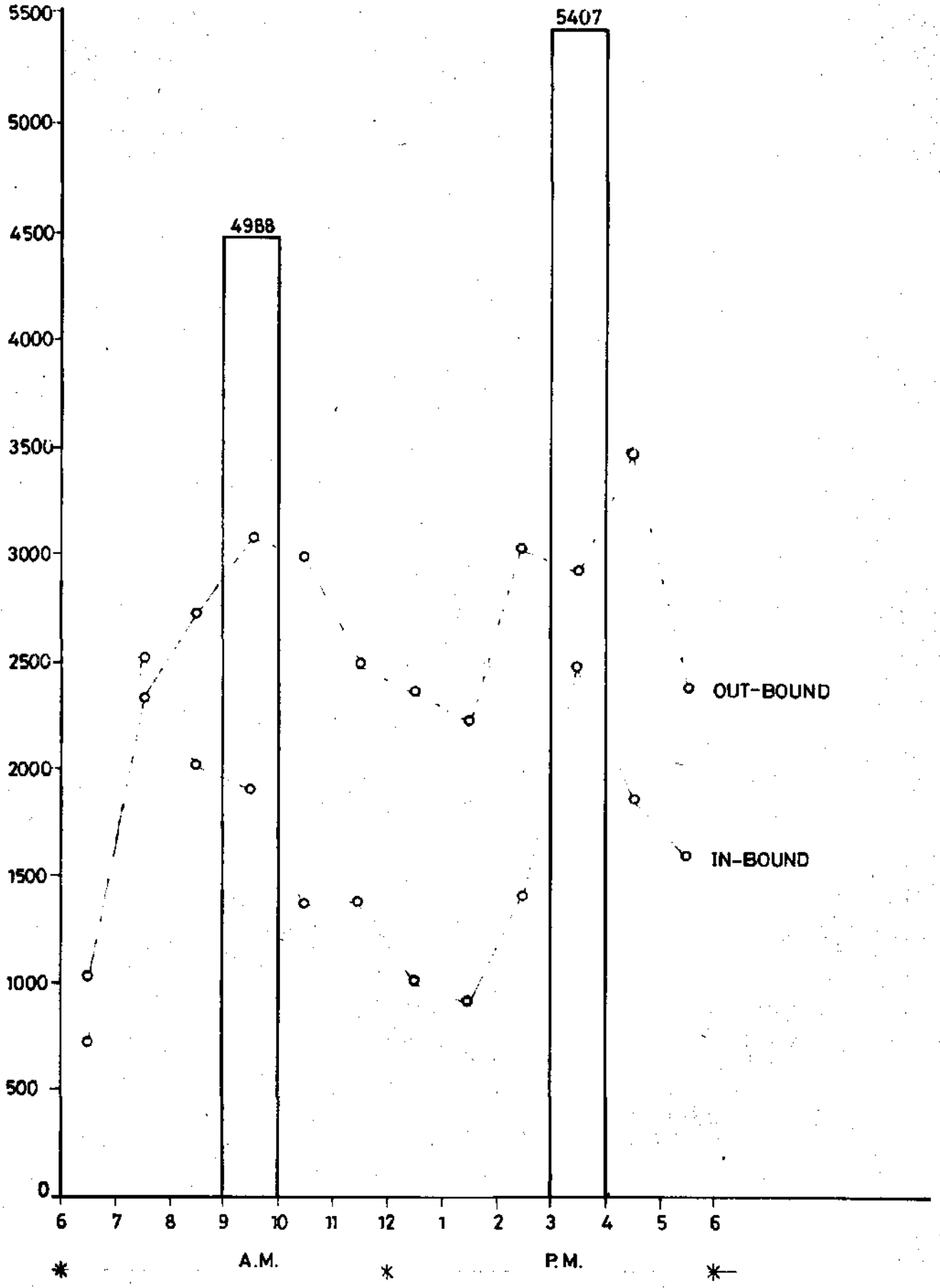


Fig 1.00 Traffic survey at Kaduna central area (Station 1 - Monday 26/4/82')
Source :- Field survey - 1982 (23-27 April)



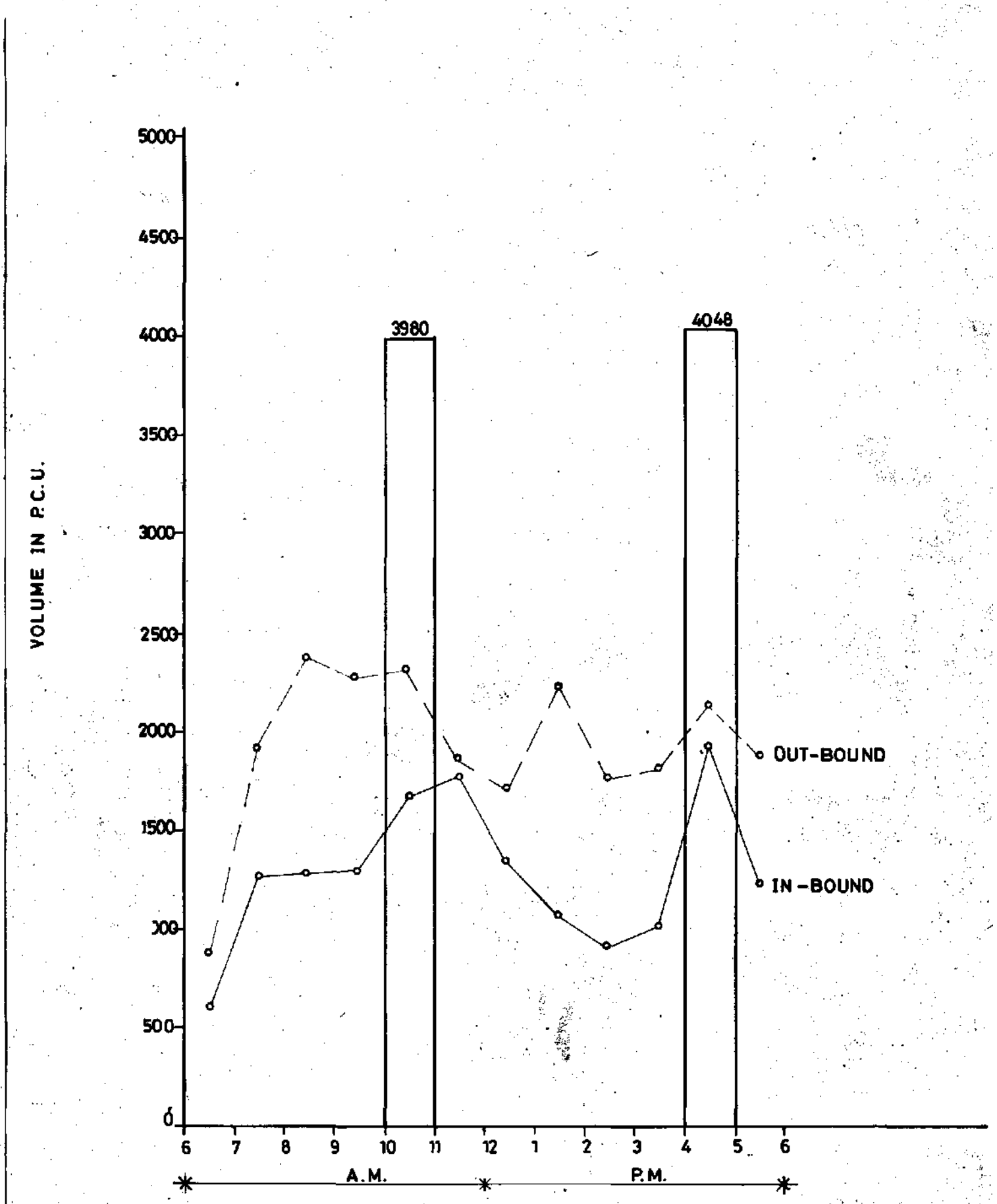
Traffic survey at Kaduna central are (Station 1 - Tuesday 27/4/82)

Source :- Field survey (1982 April)



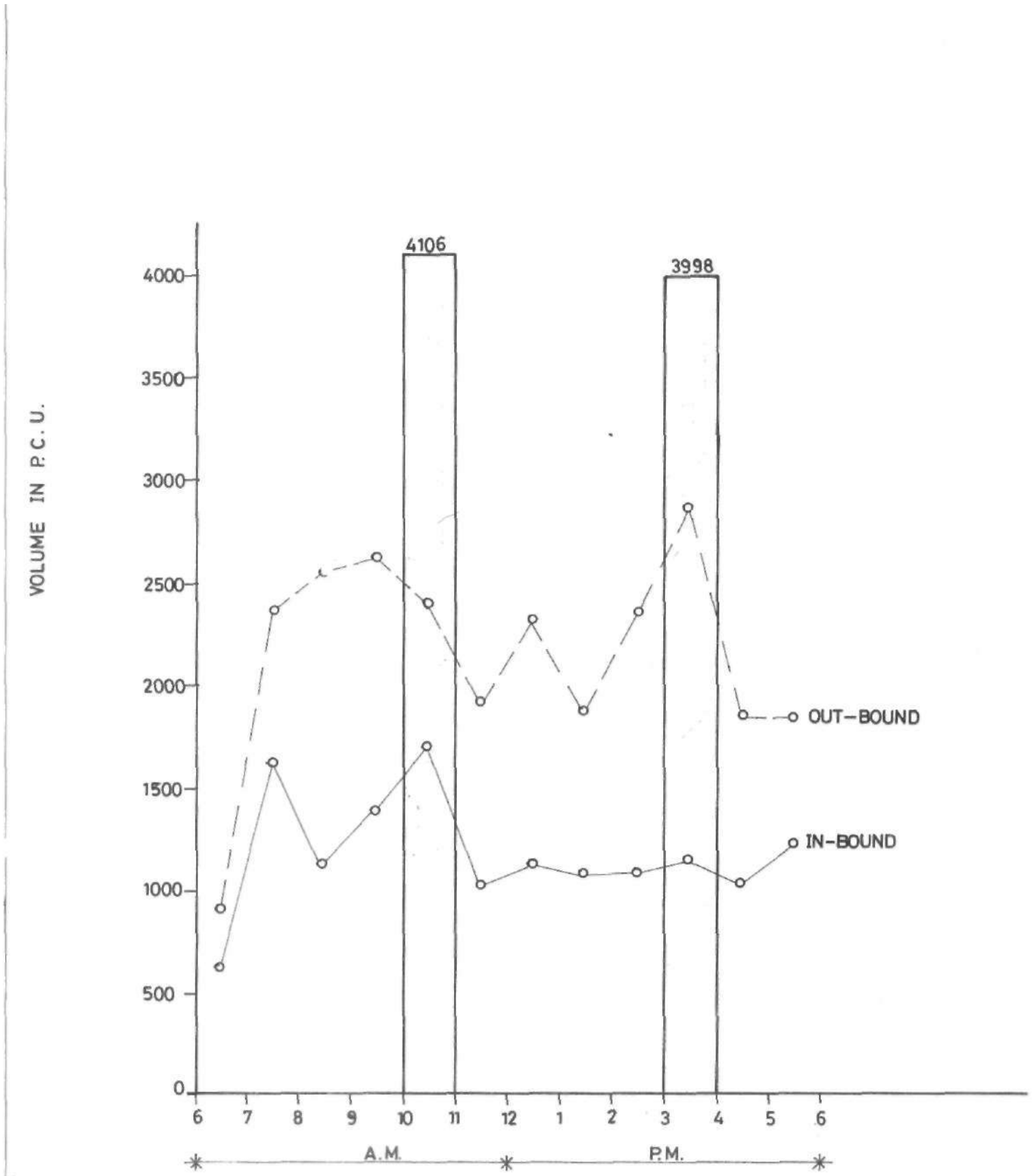
Traffic survey at Kaduna central area (Station 2- Friday 23/4/82)
Source :- Field survey - 1982 (April)

FIG. 3.05



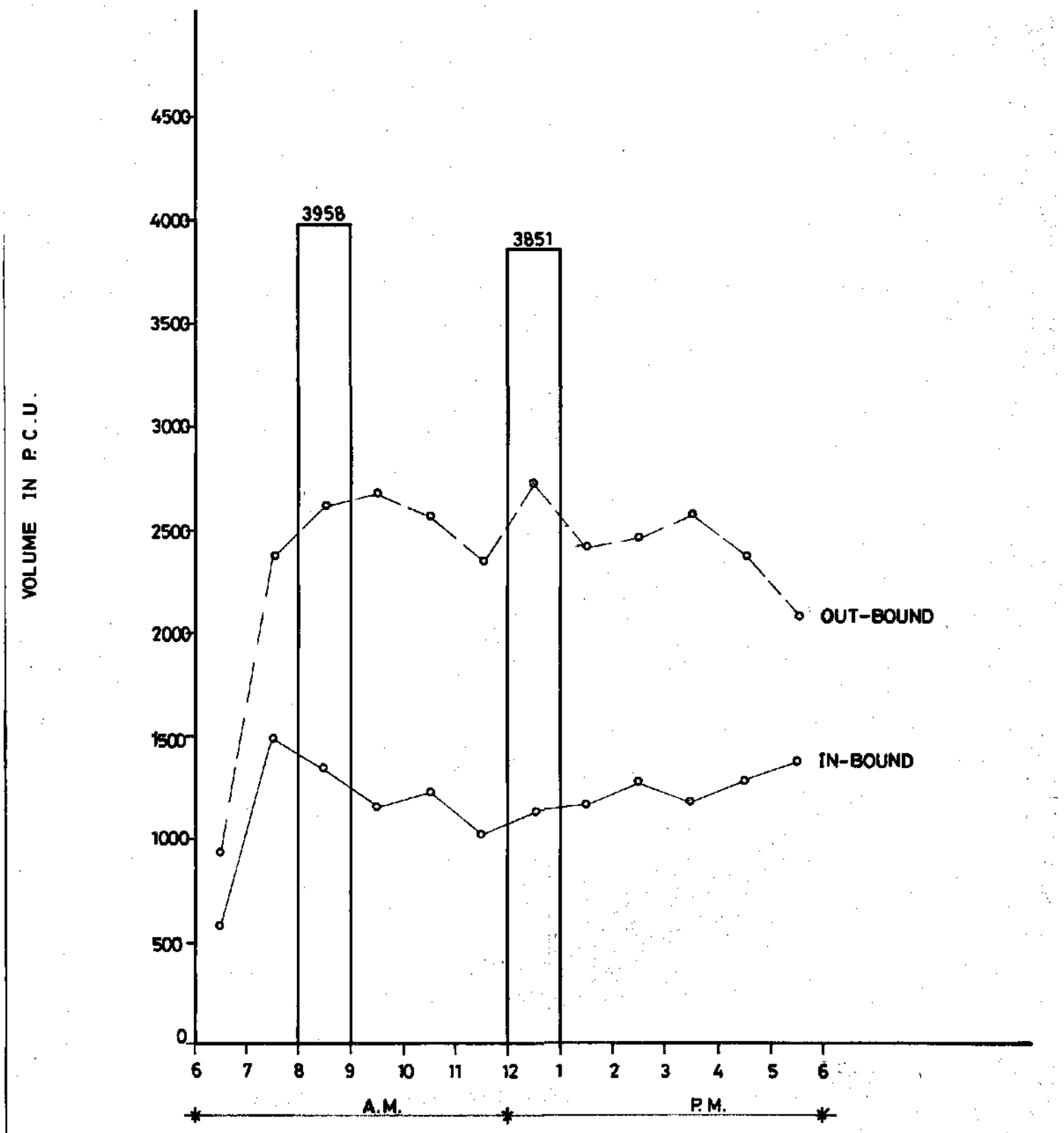
Traffic survey at Kaduna central area (Station 2-Saturday 24/4/82)
Source :- Field survey - 1982 (April)

FIG. 3.06



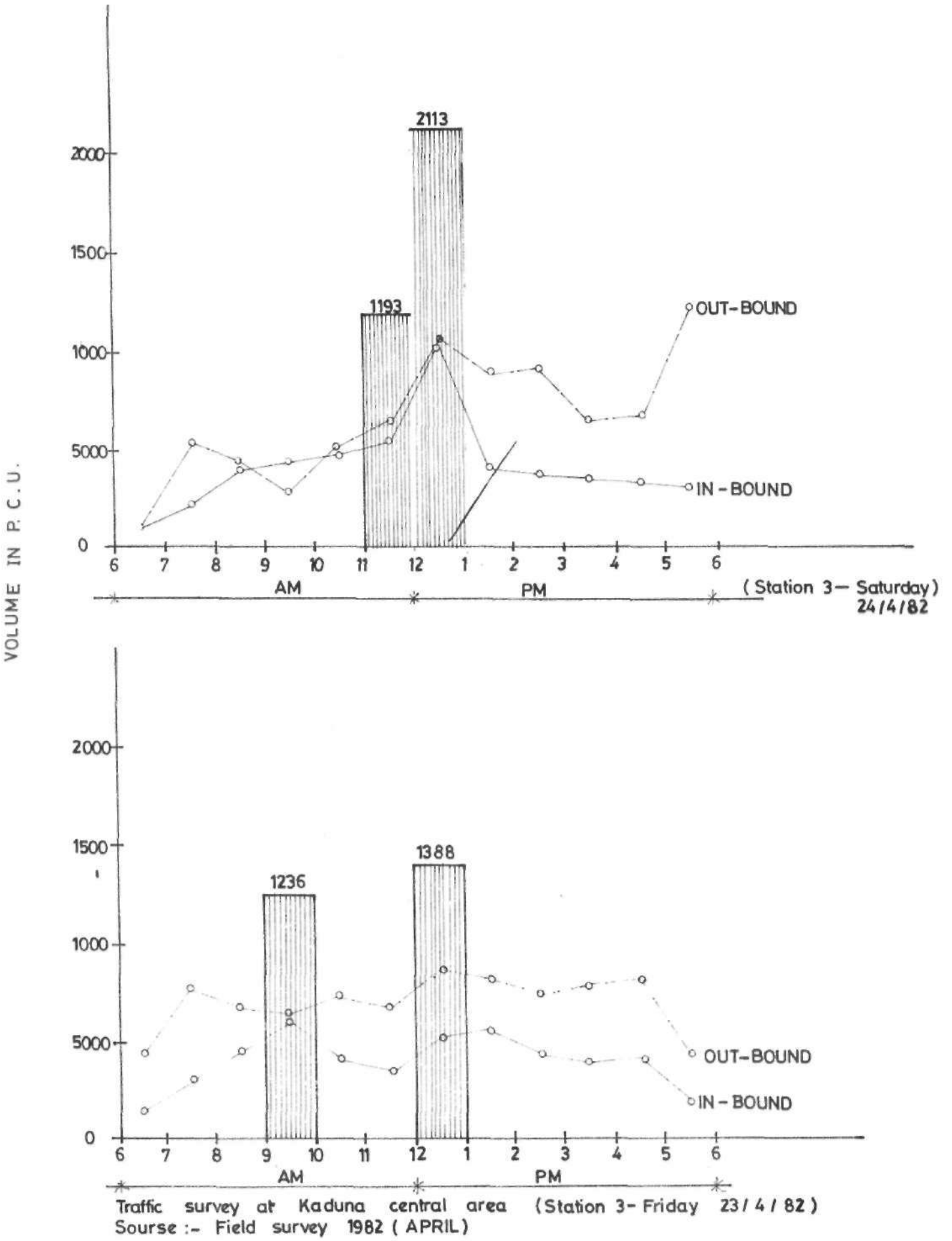
Traffic survey at Kaduna central area (Station 2 - Monday 26/4/82)
Source :- Field survey - 1982 (April)

FIG. 3.07



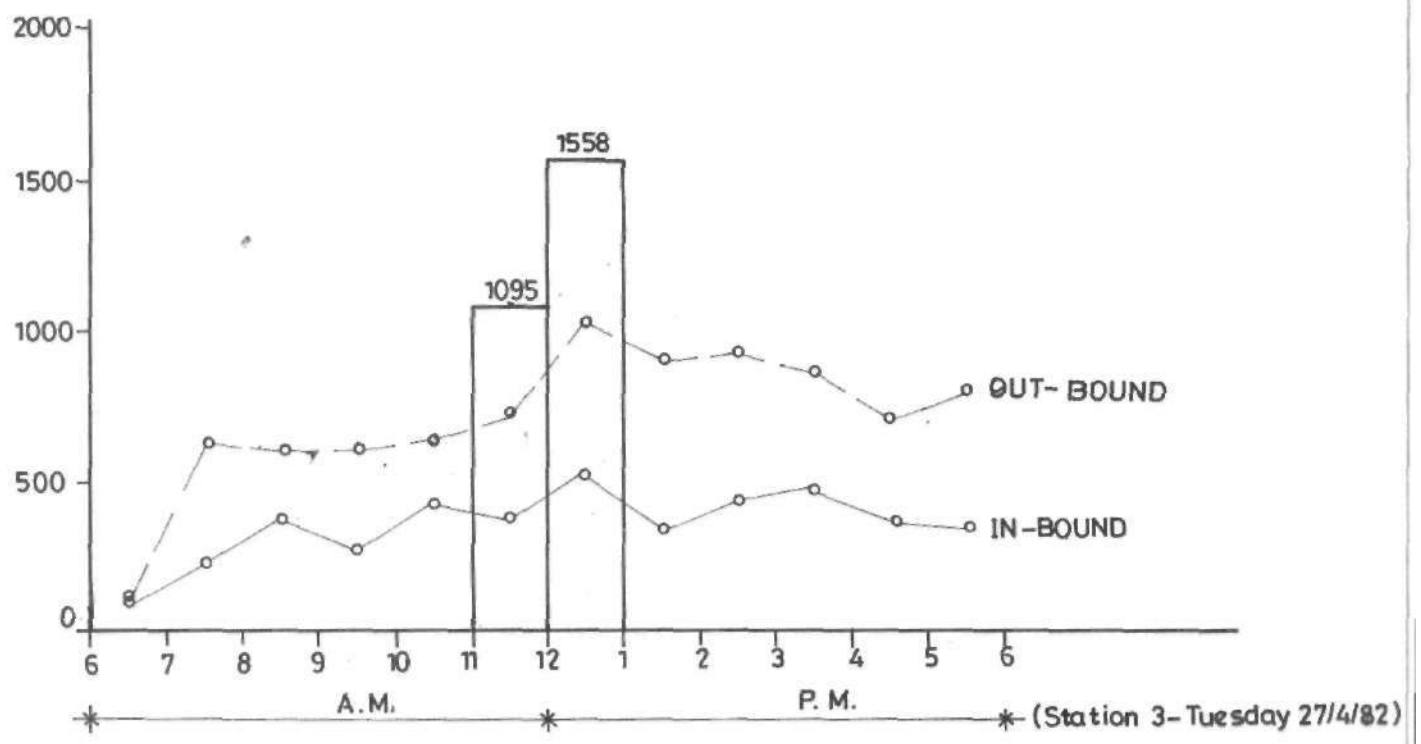
Traffic survey at Kaduna central area (Station 2- Tuesday 27/4/82)
Source :- Field survey - 1982 (April)

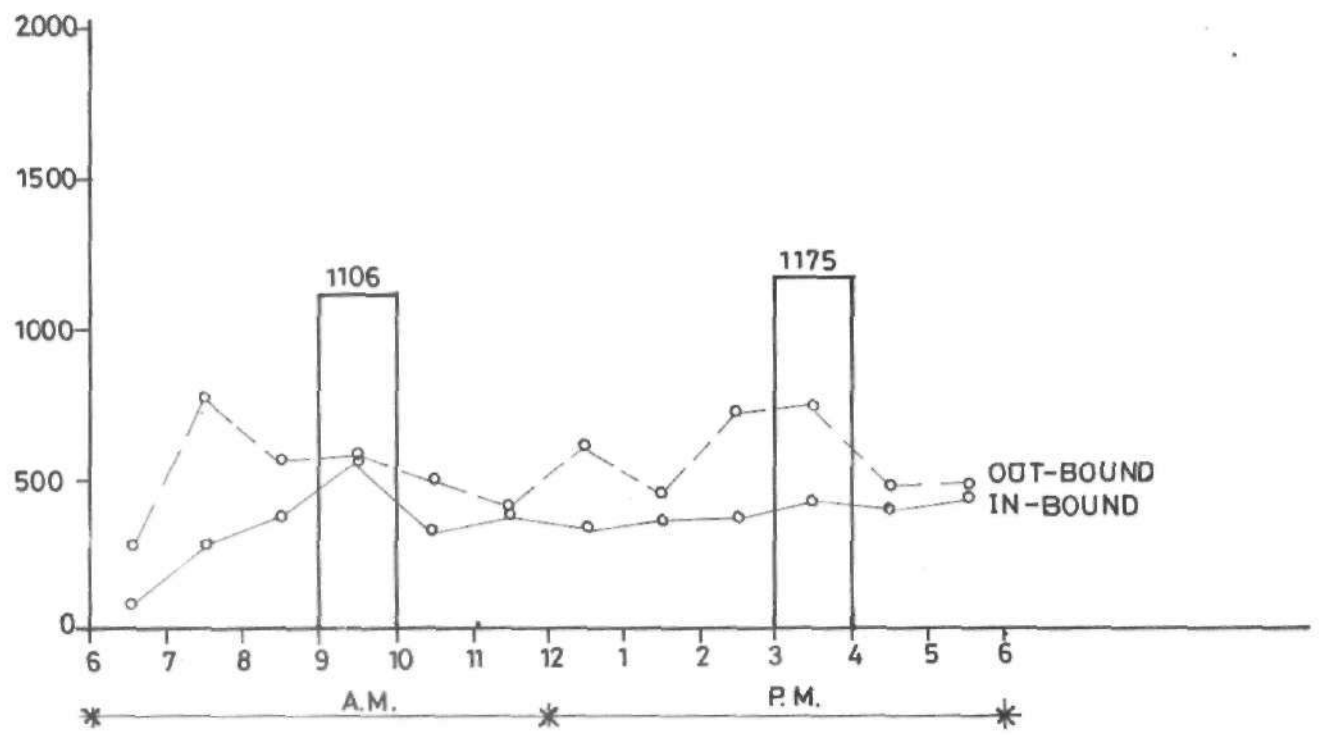
FIG. 3.08



Traffic survey at Kaduna central area (Station 3- Friday 23/4/82)
Sourse :- Field survey 1982 (APRIL)

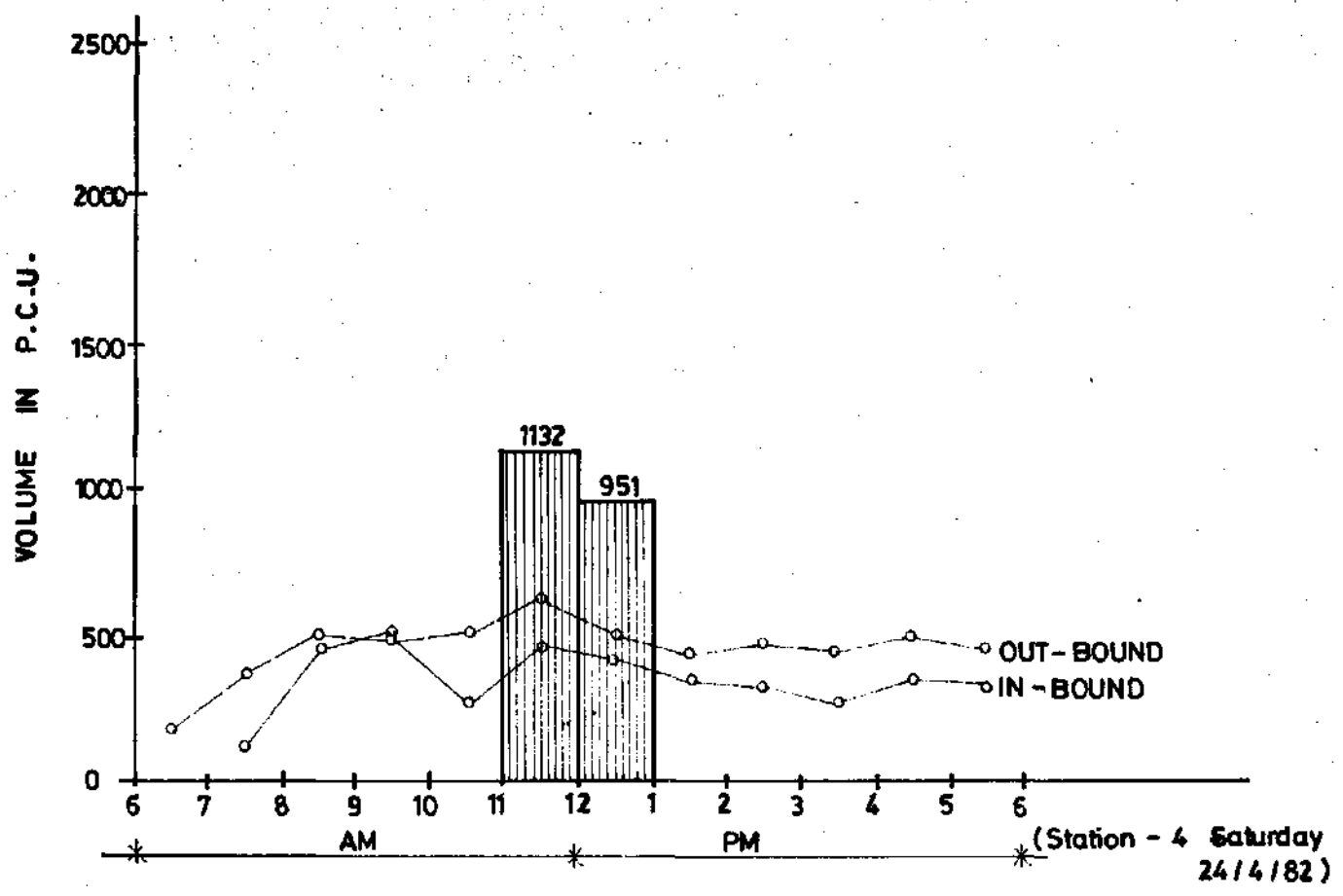
FIG. 3.09

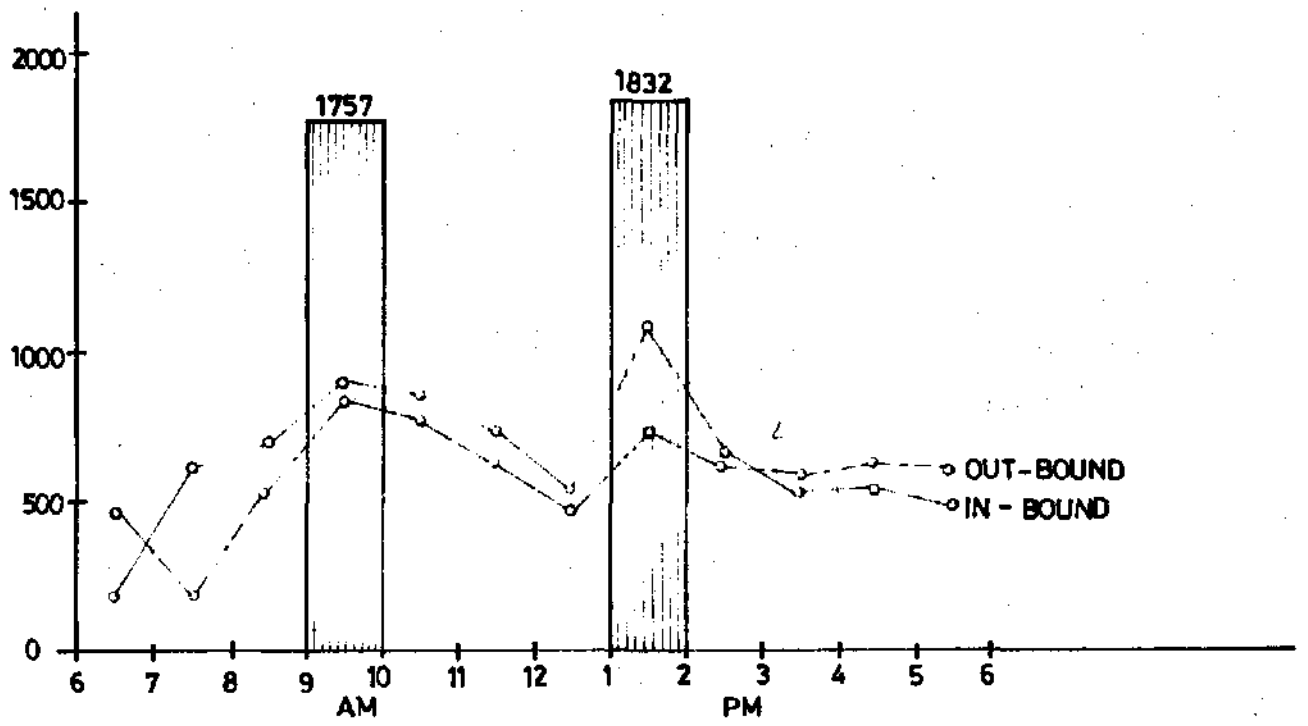




Traffic survey at Kaduna central area (Station 3 - Monday 26/4/82)
Source :- Field survey - 1982 (April)

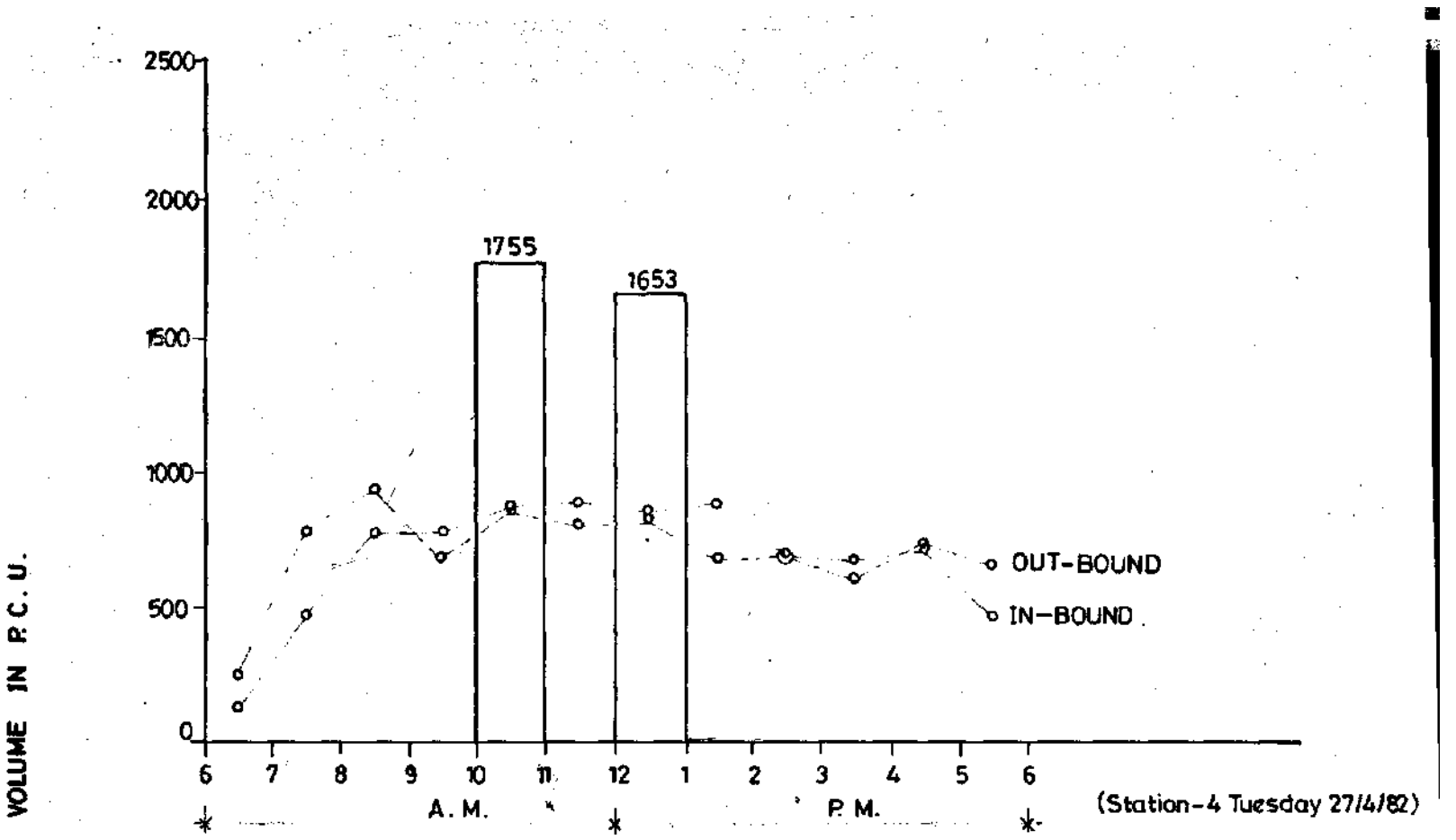
FIG 3·10

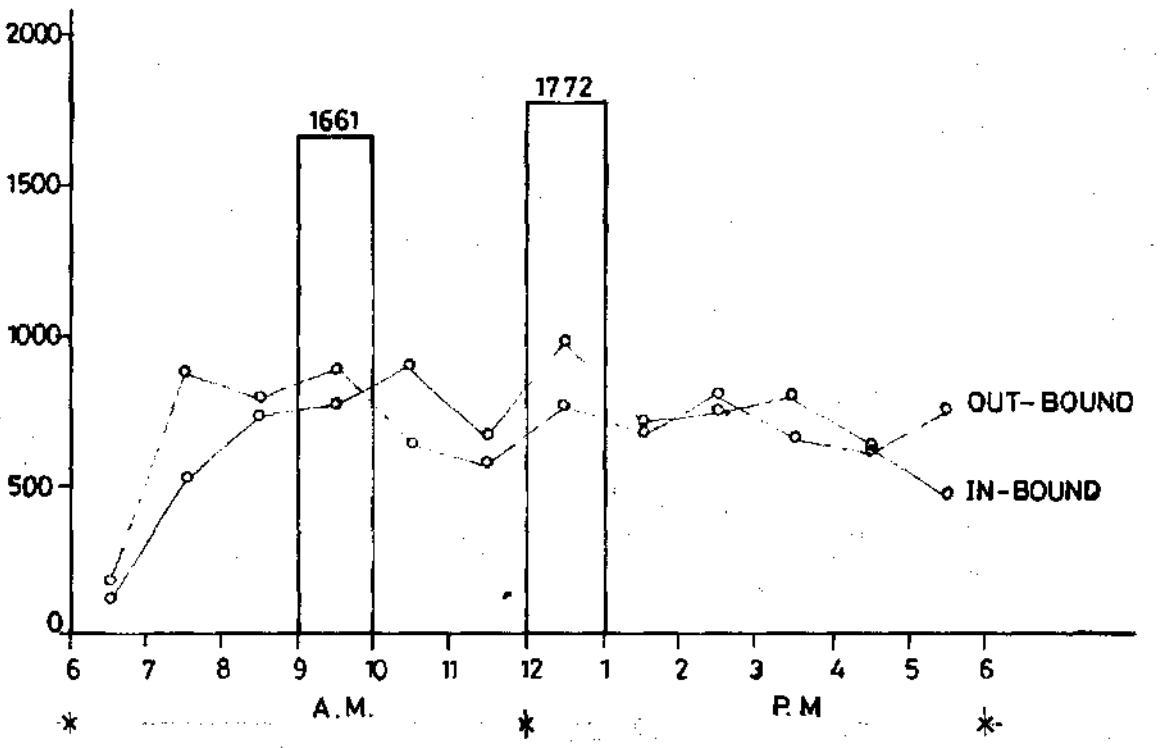




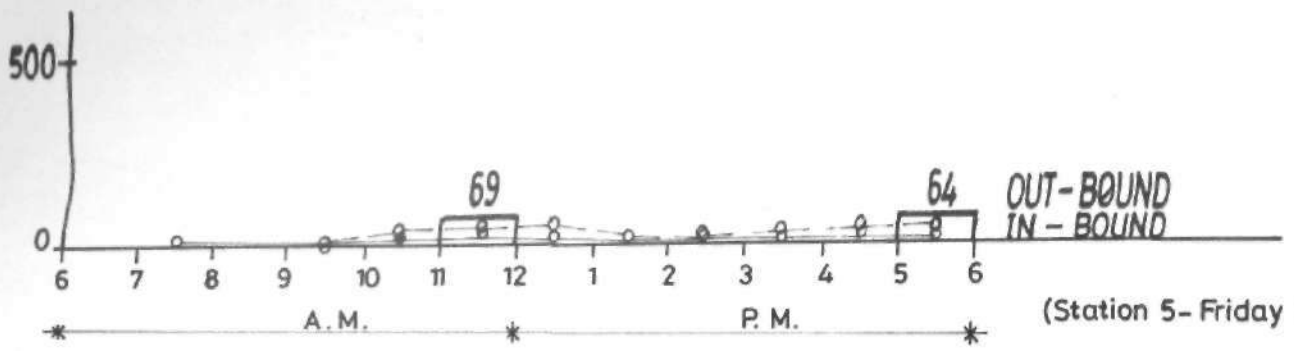
Traffic survey at Kaduna central area (Station 4 - Friday 23/4/82)
Source :- Field survey - 1982 (APRIL)

FIG 3·11

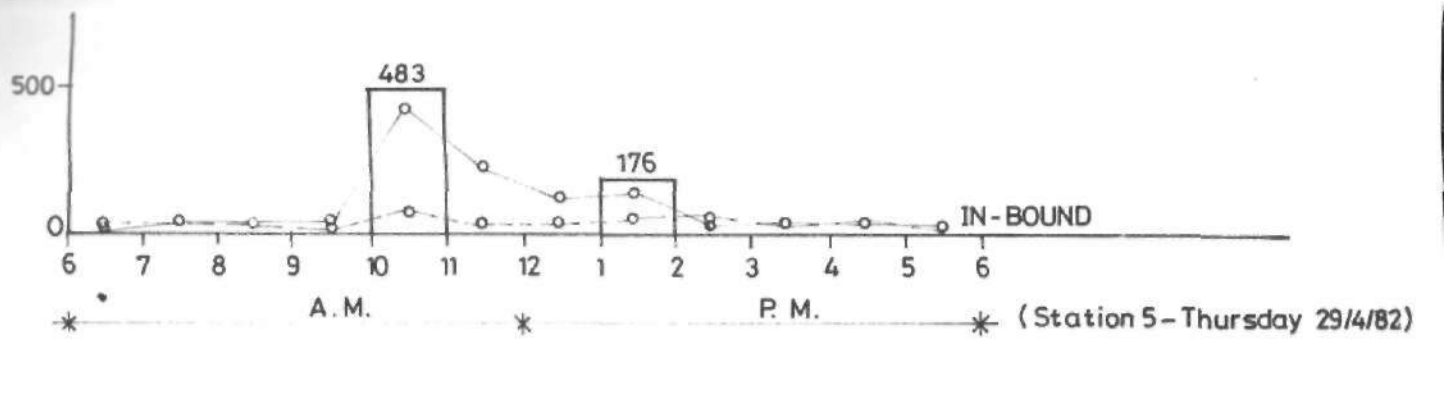




Traffic survey at Kaduna central area (Station 4 - Monday 26/4/82)
Source:- Field survey - 1982 (April)

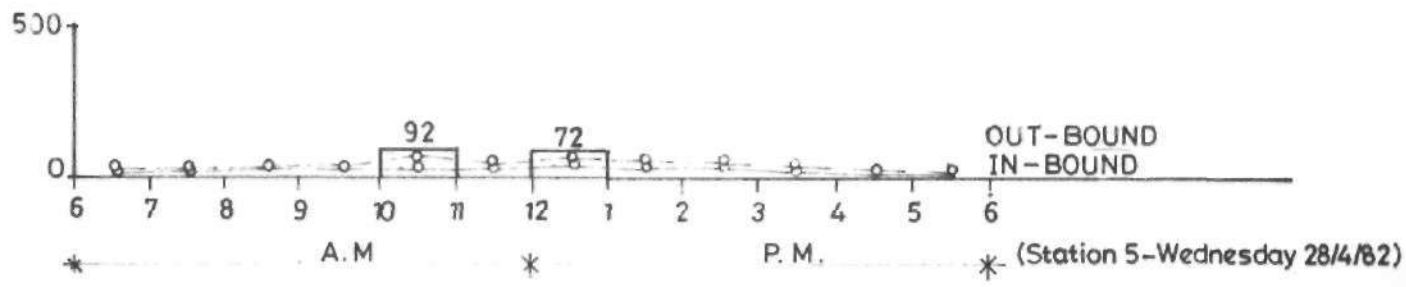


(Station 5- Friday 30/4/82

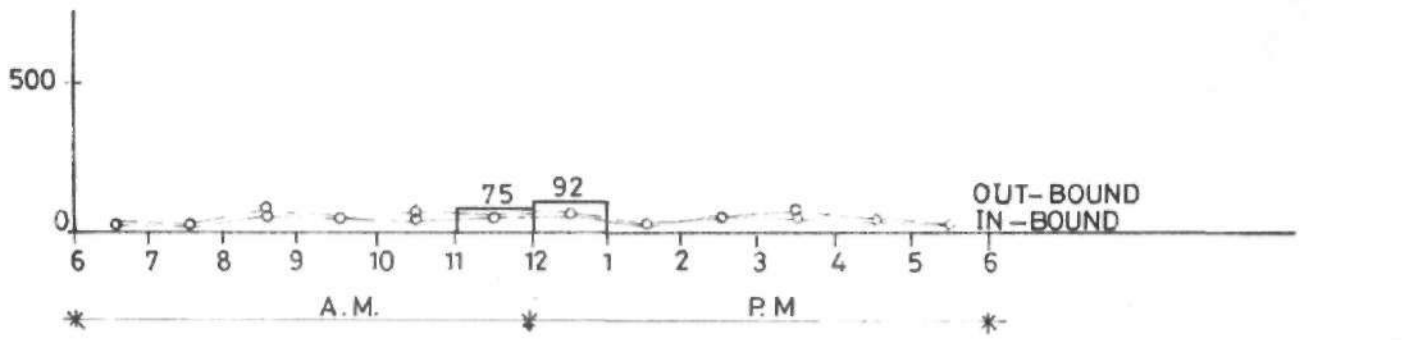


(Station 5 - Thursday 29/4/82)

VOLUME IN P.C.U.



(Station 5-Wednesday 28/4/82)



Traffic survey at Kaduna central area (Station 5- Tucsday 27/4/82)
Source :- Field survey - 1982 (April)

FIG 3·13

(iv) 5% traffic leaves Unguwan Shanu and Tudun Wada (on the west) and terminates at the centre. Total of 52.8% of all traffics terminates at the centre of the town.

Purpose of Trip:

Purpose of trips on the five stations was mostly business and shopping representing 82% while social pleasure 12% and 4% undefined.

Parking places:

70% of parking place was at the motor park and market. 20% at where they are going and 10% anywhere available.

Pedestrian traffic:

A large amount of pedestrians movement was observed from the Ahmadu Bello Way and hospital road towards the market and followed by the Tudun Wada to market movement.

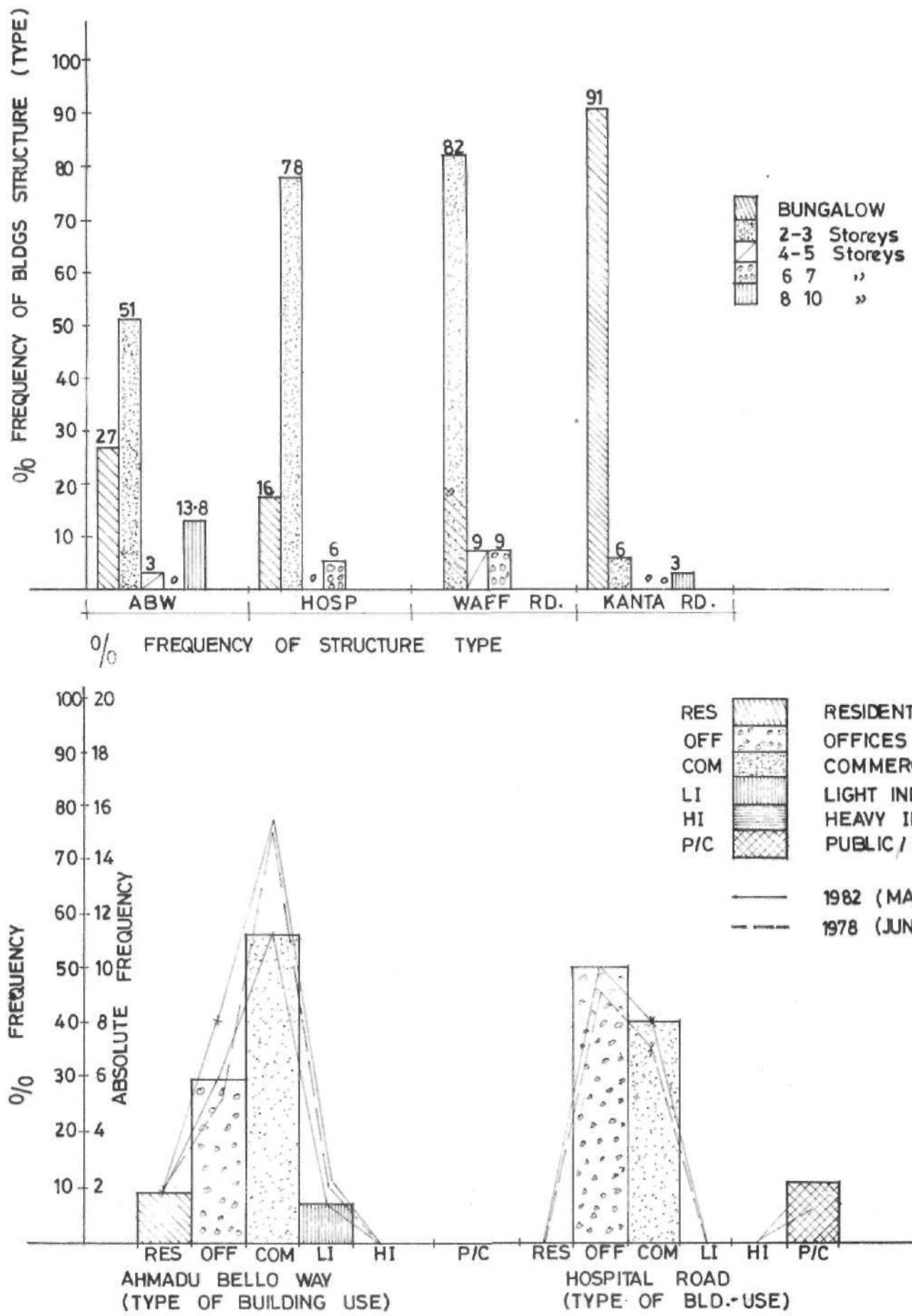
Inferences drawn from traffic survey

1. High traffic volume recorded along Ahmadu Bello Way suggest that there is need for another road to ease the traffic load (a) possibly along the railway line. (b) congestion and accidents at the Ahmadu Bello Way/ Hospital road roundabout due to the high traffic volumes

from all the four routes meeting suggest the need to have a fly-over to ease the congestion and accidents. Possibly along hospital road.

2. The high traffic load on A.B.W. could also be eased if east-west regional routes are proposed possibly boundary with the site on the north along waff road and south along market road (fig 3.09). (b) Roads within central area to be upgraded to carry more traffic volume.

3. Existing commercial strip attract large amount of traffic which presently park along the streets. Proposed multi-storey parking in central area would ease this problem.



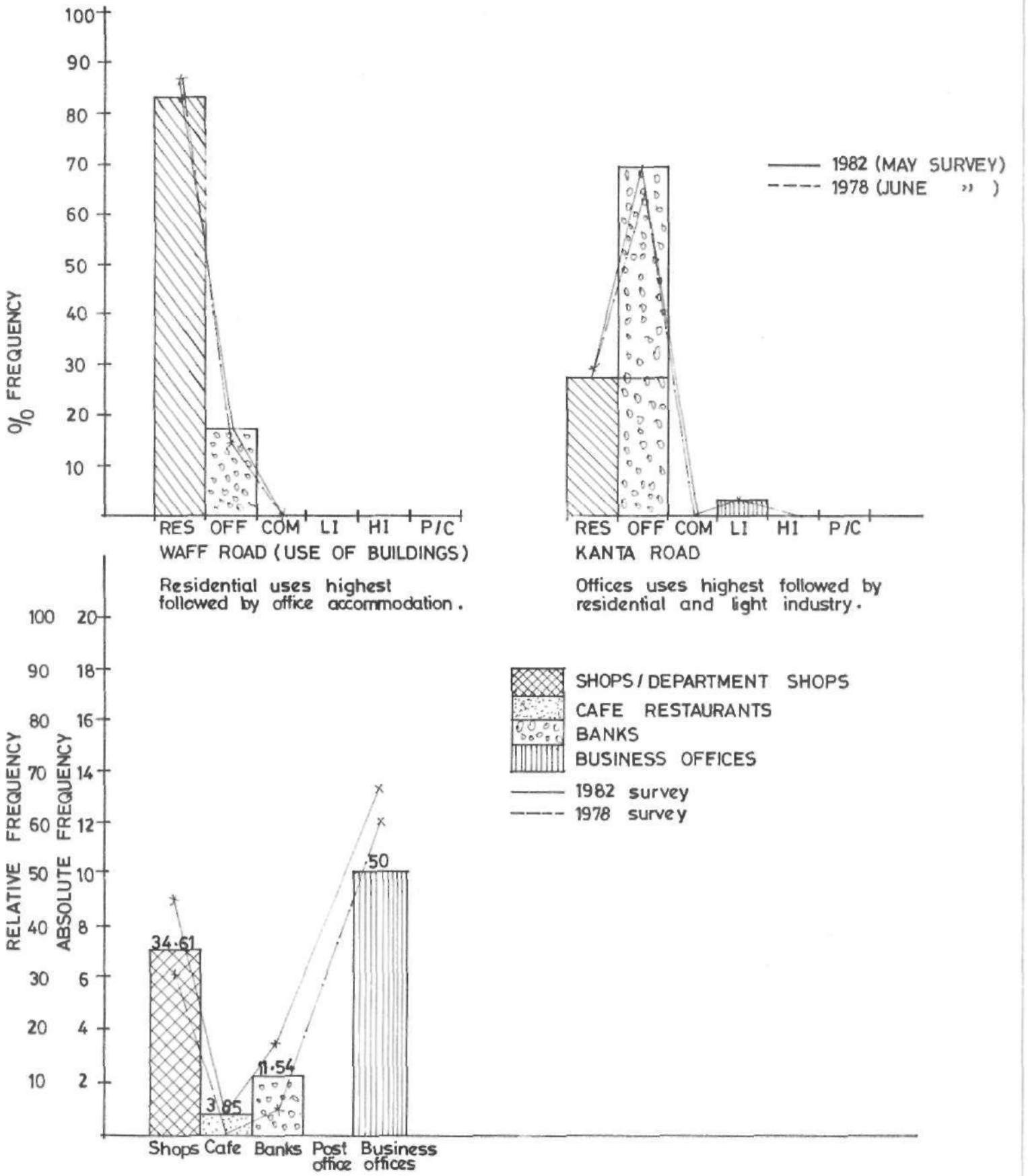
Office accomodation on the shape increase b/w 78 – 82 .

Shows that use of blgs mainly commercial then followed by office uses Res and LI

Office highest followed by commercial uses then public and civic uses.

Office accomodati on commercial and public civic on the increase.

FIG. 3 .14


100
90
80
70
60
50
40
30
20
10
% FREQUENCY
RES OFF COM LI HI P/C
WAFF ROAD (USE OF BUILDINGS)
Residential uses highest followed by office accommodation.
1982 (MAY SURVEY)
1978 (JUNE »)
RES OFF COM LI HI P/C
KANTA ROAD
Offices uses highest followed by residential and light industry.
RELATIVE FREQUENCY
ABSOLUTE FREQUENCY
100 20
90 18
80 16
70 14
60 12
50 10
40 8
30 6
20 4
10 2
34·61
3·85
11·54
50
SHOPS / DEPARTMENT SHOPS
CAFE RESTAURANTS
BANKS
BUSINESS OFFICES
1982 survey
1978 survey
Shops
Cafe
Banks
Post office
Business offices
TYPE OF COMMERCIAL USE ALONG A.B.W.
Since 1978 shops and business offices and banks and cafe have increase moderably.
Shows that the commercial business along A.B.W. is on the increase with business offices highest (50 %) next is the shops supermarkets (34·61 %) then banks (11 54 %) and cafe shops (3·85 %).

3.20 Landuse Surveys: (fig 3.14 - 3-15)

Most of the development within the central area of Kaduna are located along Ahmadu Bello Way (ABW), hospital road, waff road, and Kanta road. Highest concentration of buildings are found here. Lowest height of buildings is single storey while highest height is 12 storeys. The use of these buildings are mainly commercial then followed by offices (fig 3.14). The military occupy large area of land.

Inferences drawing from landuse surveys:

1. 2-3 storey height buildings predominant ground the central area. ABW-51% hospital road - 78%, waff road-82% and Kanta Road - 6%. ABW has highest percentage of all buildings between 8-12 storeys heigh - 13.8%. (fig 3.15).

2. Use of building along ABW are mainly commercial followed by office uses, residential and light industrial. Office accommodation along ABW on the increase. Hospital road has highest use of offices followed by commercial uses then public and civic uses, Waff road, residential use highest followed by offices, Kanta Road has highest office uses then residential and light industry.

3. Number of statutory bodies/corporations and embassies have doubled since 1978 survey. Number petrol filling station increased. No new religious buildings since 1978 survey.

4. Hawkers are seen lining the main routes causing traffic congestion and accidents. A marked area in the city centre for hawkers could solve this problem.

5. Re-grouping of some central functions could have eased some of the landuse problems.

Inferences from Cultural and Social Surveys:

1. The various and different tribes found in the town suggest need to integrate the people socially. Design to be flexible and permissive to all.

Inferences from Building Forms

1. City centre to show image of the whole country in terms of architecture and decorations.

2. Buildings to blend to existing building heights. Building forms to be simple with high art so as to identify with traditional architecture and level of technology.

3.30 Estimated population of town and Residential Areas

3.31 Estimated Population of Town

Year	Rate	Population
1978	8.6%	600,000
1979	"	651,600
1980	"	707,637
1981	"	768,494
1982	"	834,585
1983	"	906,359
1984	"	984,306
1985	"	1,068,956
1986	"	1,160,886
1987	"	1,260,722
1988	"	1,369,144
1989	"	1,486,890
1991	"	1,614,762
1992	"	1,753,632
1993	"	1,904,444
1994	"	2,068,226
1995	"	2,246,093
1996	"	2,439,257
1997	"	2,649,033
1998	"	2,876,849
1999	"	3,124,258
2,000		3,392,944
TOTAL	3.1	

3.32 Estimatwe Population for Residential Areas

Residential Area of City	% of City Pop. occupied	Estimated Pop. for Districts 1978	1988	2,000YR
1. Kawo	20%	120,000	273,829	678,589
2. Barnawa	14%	84,000	191,680	475,012
3. Kakuri	11%	66,000	150,606	373,224
4. Unguwan Shanu	10%	60,000	136,914	339,294
5. Tudun Wada	7.6%	45,600	104,055	257,864
6 .Doka	7%	42,000	95,840	237,506
7. Unguwan Rimi	5.2%	31,200	71,196	176,433
8. Kabala	5.0%	30,000	18,457	169,647
9. Unguwan Malali	4.0%	24,000	54,766	135,718
10, Tudun Wada-Sabo	3.8%	22,800	53,028	128,932
11. Makera	2.9%	17,400	39,705	98,395
12. Nassarawa	2.7%	16,200	36,967	91,610
13. Badarawa	2.5%	15,000	34,229	84,824
14. Unguwan Telev.	2.5%	15,000	34,229	84,824
15. Sabo-Kabala	1.8%	10,800	24,645	61,073
TOTAL	100	600,000	1,369.144	3,392.944

By the year 2,000 the population of Kaduna would have grown to about 3,4000,000 (million and will consists of 15 residential areas:- (fig. 3.07)

1.	Kawo	(9)	Makera
2.	Unguwan Shanu	(10)	Kakuri
3.	Unguwan Rimi	(11)	Kabala
4.	Doka	(12)	Unguwan Malali
5.	Tudun Wada	(13)	Unguwan Television
6.	Tudun Wada - Sabo	(14)	Sabo-Kabala
7.	Barnawa	(15)	Badarawa
8.	Nassarawa		

District Pop	=	(250,000 - 300,000) (fig. 3.07)
Community Pop	=	(80,000-100,000)
Residential Sector	=	(26,000-30,000)
Residential Sub-Sector Pop	=	(8,000-10,000)

3.40 Expected size of city centre:

3.41. Using British standard for New towns:
- One acre per 1,000 people for city centre for town with population 100,000

Year	Pop.	Area in Acre	Area in Ha for city centre	Existing Area	Required Add. Area.
	1,000	1 acre	½.5 Ha	--	---
1978	600,000	600	240	128Ha	112 Ha
1982	834,585	834.585	334	128	206 Ha
1988	1,369,144	1,369.144	548	128	420 Ha
2,000	3,400,000	3,400.000	1,360	128	1,232 Ha

Existing area of city centre = 128 Ha

∴ RQ area of C.C. (whole town) =(1,360-128)Ha

= 1,232Ha

District pop = (250,000-300,000)= RQ area per District = 120 Ha

∴ For 5 Districts = 600 Ha.

RQ. area for C.C. Hence $\frac{632 \text{ Ha}}{48 \text{ Ha}}$ = 12 times

Area Given = 48 Ha =

which implies 12 x intensity of use.

3.42 Using Western Nigeria Standard of 4.5-6.5% of total developed area for commercial area for a city greater than 250,000.

- Total area to be developed by yr. 2,000 = 11,264 Ha.

:. City Centre (5% of 11,264) Ha = 563 Ha

Existing area of city centre = 128 Ha

.. RQ area = (563.2 - 128)Ha = 435.2 Ha

Assuming 60% for Districts = 261 Ha

which implies area for city centre = (435.2 - 261.0)Ha.

area required for city centre = 174 Ha

area given = 48 Ha = 174/48= 4 times

.. <u>Site intensity will be 4X</u> (4 times)

Using the British standard we arrive at 12 times intensity while the Nigerian Standard gave 4 times intensity. If we are to strike a balance between the two we get 8 times intensity. The Nigerian standards looks more appropriate, Therefore this thesis will use this standard, Which means that the required area for our city centre will be 174 hectares. Basing on area given (48 Ha) the intensity will be 4 times.

3.50 Identification of Various alternative concepts of city centre designs

3.51 Introduction:

Centre city designs varies in shape and sizes Some are enlongated, some concentrated others scattered. Fig. 318A shows the relative accessibility of city centres. The arrow in this figure which is standard shows how the relative accessibility varies from one shape of the central core to another. Central cores like (C) and (F) in fig 3.18A shows compact centres more than (A), (B) (D) and (E) whose centres are more broad and larger therefore loosing the compactibility. It is thus easier and saves more time to shop in centres (C) and (F) than any other.

Fig 3.18B shows the possible distribution of uses within a typical modern city centre. With shops commercial) and stadium (sports) carrying the largest proportion in area. Entertainment, local government offices, professional offices, and community offices are next in area allocation. Some amount of area is allocated for industry. Surrounding the whole centre are residential areas.

Fig 3.18C gives the required areas for parking for workers, for visitors and area for buildings as proposed by Lewis Keeble for a town of 100,000 inhabitants.

3.52 Concepts of city centre:

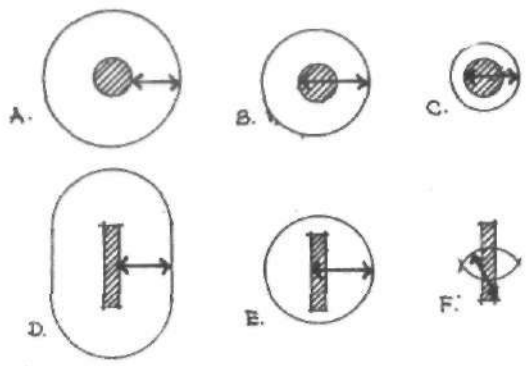
These are existing concepts that will be studies so as to enable an understanding of the varies alternative concepts.

(i) City Centre within City traffic (fig 3.19A)

This is the most common kind of centres found. Centres develop along traffic routes. With this kind of centre which in most cases are unplanned, the traffic chaos is enormous. Lack of parking spaces, lack of proper delivery point, traffic hold-ups, etc. This could be called an incidental city centre. Pedestrian crossing is always a problem.

(ii) City Centre along traffic routes (fig. 3.19B)

Like above this centre develop along traffic routes Problem of lack of organisation, lack of proper utilisation of landuses, etc, are visible.



RELATIVE ACCESSIBILITY

FIG 3.18A

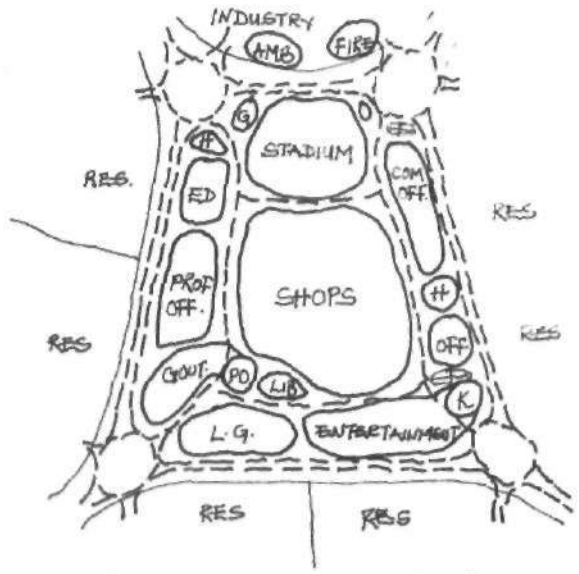


FIG 3.18B

POSSIBLE DISTRIBUTION OF USES WITHIN TOWN CENTRE

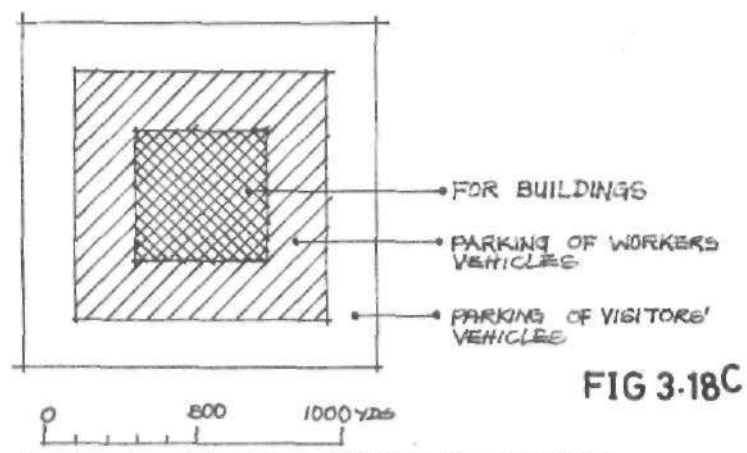


FIG 3.18C

AREAS WHICH MIGHT BE NEEDED IN CENTRAL AREA OF A TOWN FOR 100,000 PEOPLE

SOURCE:- LEWIS KEEBLE - 1969 - THE ESTATE GAZETTE LTD.

FIG 3.18

(iii) City Centre at traffic junction (fig 3.19C)

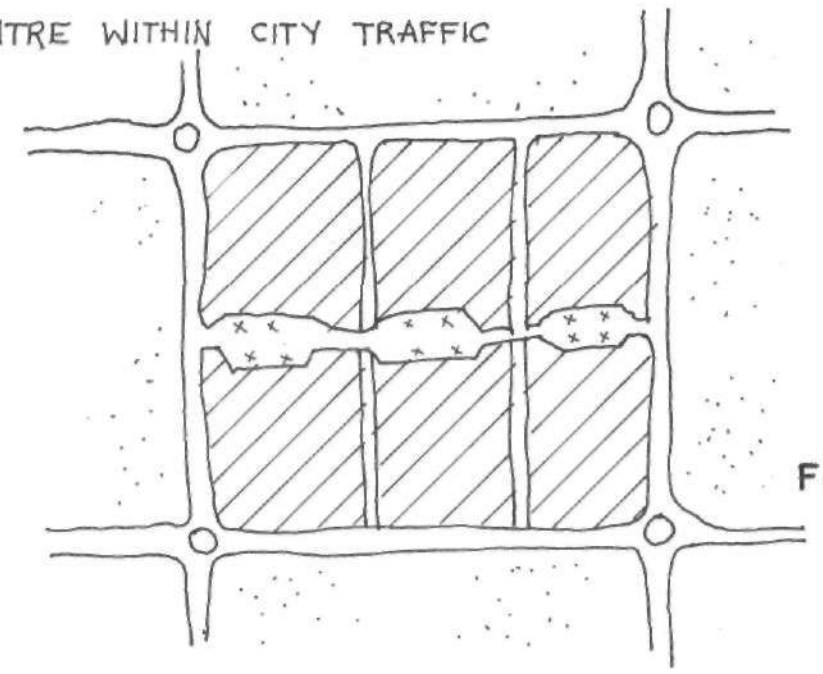
The central traffic junction becomes a square while areas bounding it consists of shopping centres. Problem with this is that visitors park along the routes. Although most delivery are done at the backyard of the shops, it is not convenient for trucks to turn easily. Pedestrian crossing pose a danger. However, this kind of centres are densely build and compact so the relative shopping distances are reduced to minimum.

(iv) Pedestrian Precinct (fig 3.20A) with parking enclosed by ring road.

Where the vehicular traffic is completely separated from the pedestrian traffic. It offers the pedestrian the opportunity to shop round without bodering to think of crossing a vehicular traffic way. However, this theory pose some problems, noticeable among them is that of servicing the shops with goods. The freeand peaceful shopping made by pedestrians could be further enhanced by integrating squares and playground within the centre to make if more interesting. Mothers can confidently leave their childern to play around the square while they shop.

CONCEPTS OF CITY CENTRES

1. CENTRE WITHIN CITY TRAFFIC



FIG·3·19A

2. CITY CENTRE ALONG TRAFFIC ROUTES

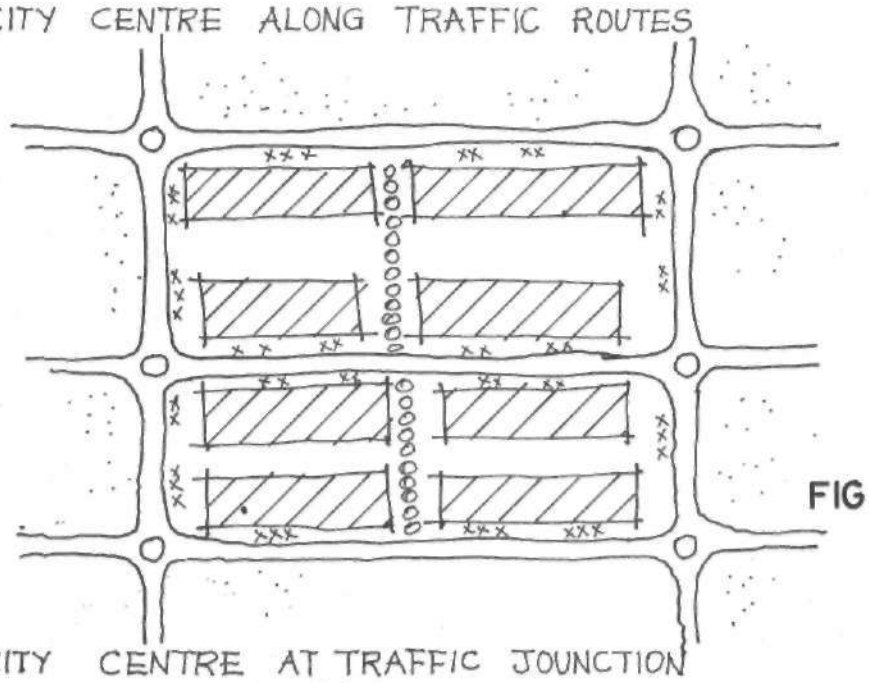


FIG. 3·19B

3. CITY CENTRE AT TRAFFIC JOUNCTION

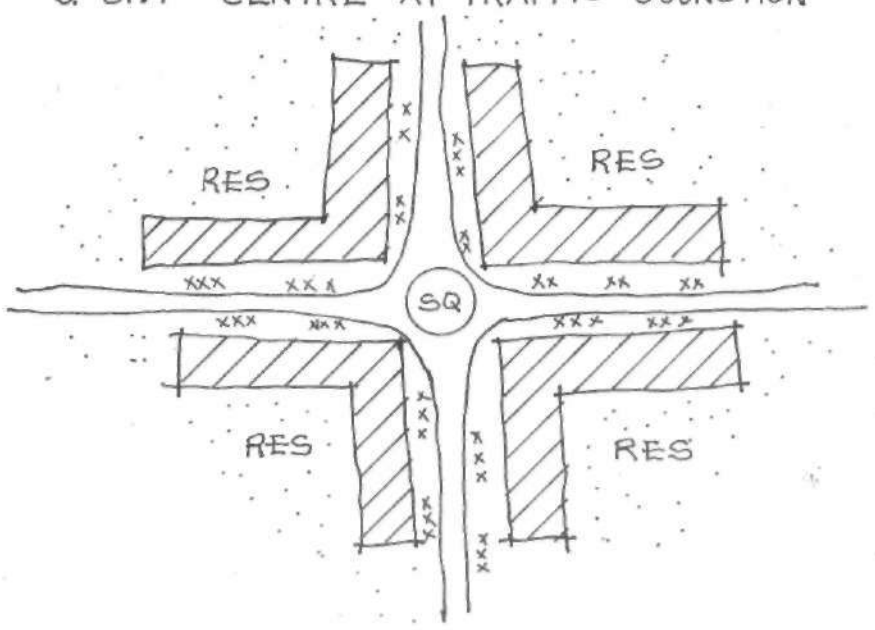
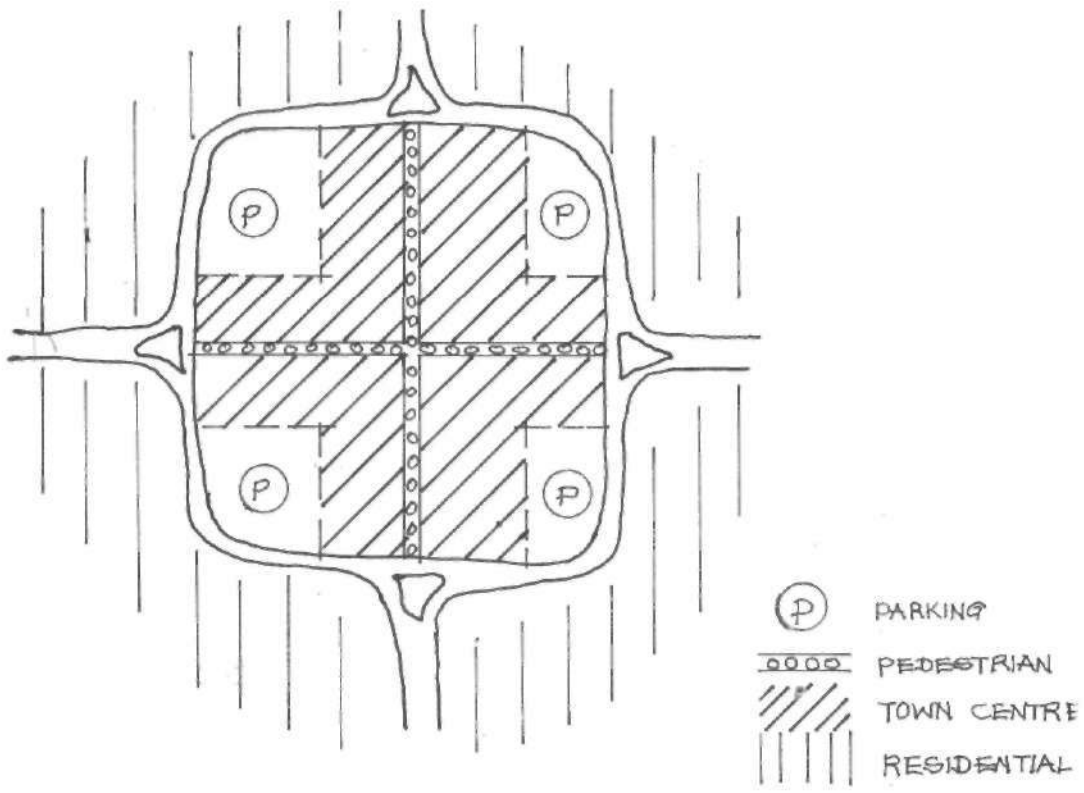


FIG. 3·19C

C.C. AREAS
PARKING
RESIDENTIAL

FIG. 3·19



PEDESTRIAN PRECINCT

FIG. 3-20A

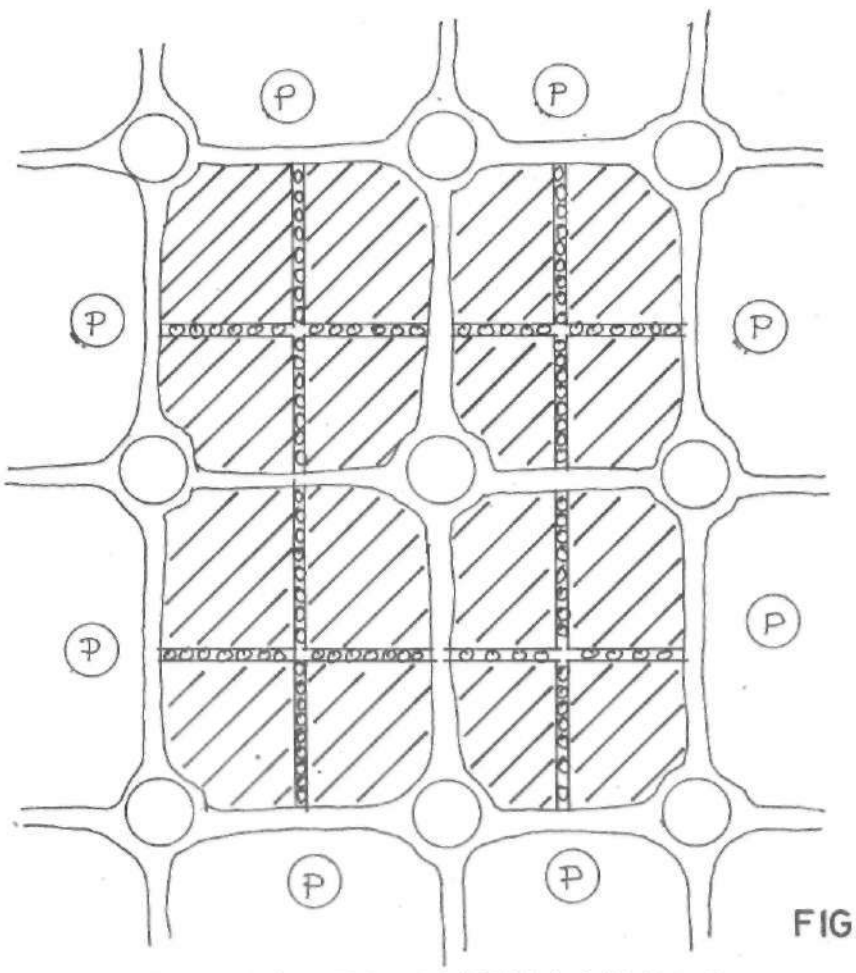
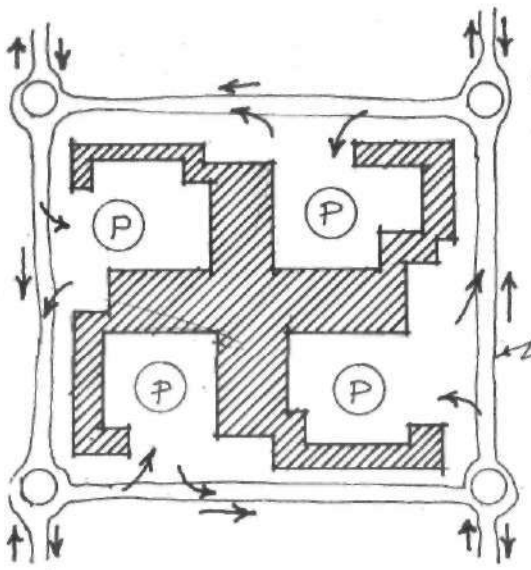


FIG. 3-20B

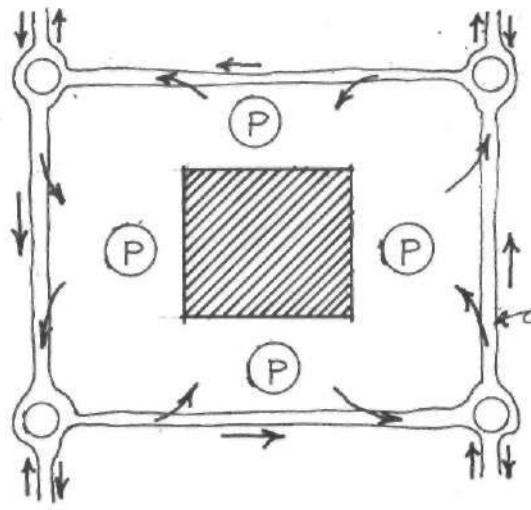
FIG3-20 PEDESTRIAN PRECINCT + VEHICULAR TRAFFIC



1. PARKING AREAS ENCLOSED BY CENTRE

ONE-WAY TRAFFIC

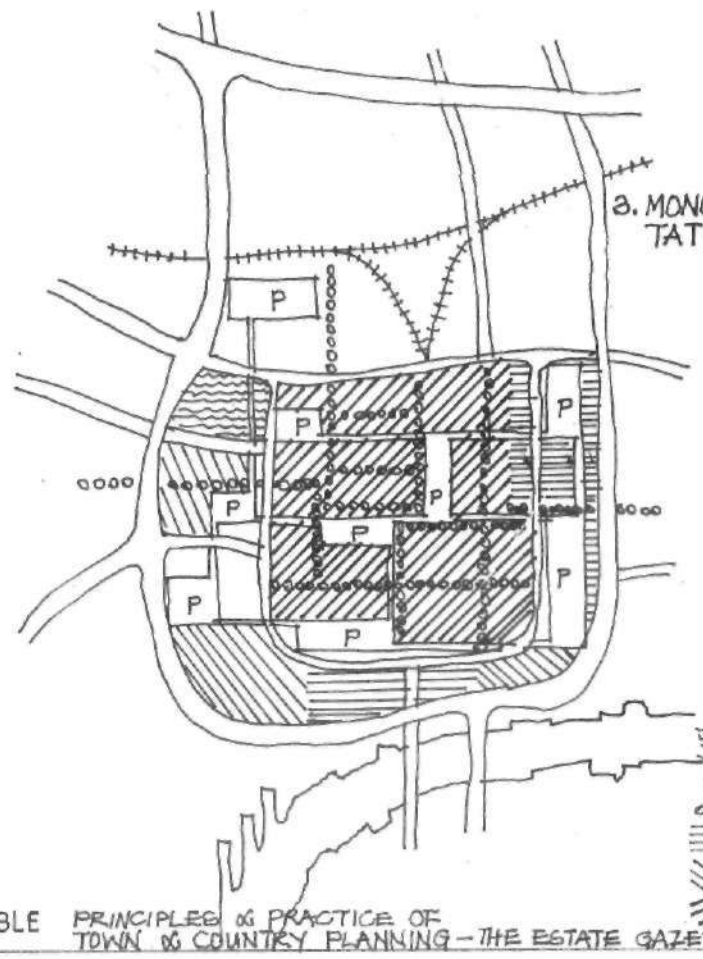
FIG. 3·21A



2. CENTRALISED CENTRE WITH PARKING SURROUNDING

ONE-WAY TRAFFIC

FIG. 3·21B



3. MONOCHROME REPRESENTATION OF TOWN CENTRES

FIG. 3·21C

FIG 3·21

SOURCE :- LEWIS KEEBLE PRINCIPLES & PRACTICE OF TOWN & COUNTRY PLANNING - THE ESTATE GAZETTE LTD.

(i) Pedestrian precinct with vehicular traffic (fig 3.20B Like above, only the peace of pedestrians are distrubed by motor traffic.

(vi) Pedestrian precinct with parking enclosed by centre (fig 3.21a)

This kind of city centre is very practical in the sense that the parking areas could easily be used also as a delivery point. Visitors after parking could easily walk into the centre and do their shopping without vehicular interferance. Problem here is that parking spaces meant for delivery trucks could at the time of delivery be occupied by visitors' cars.

(vii) Pedestrian precinct - centralised centre with parking Surrounding (fig 3.21B)

This is typical of most American centres. You have large parking spaces all round the shopping mall or centre.

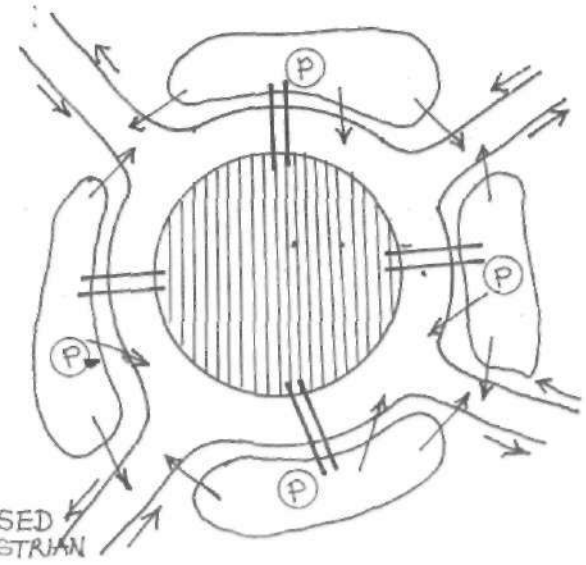
3.53 Concepts for City Centres:

These are concepts developed by the author for possible use for city centres.

(i) Pedestrianised centre with parking on the periphery (fig 3.22A)

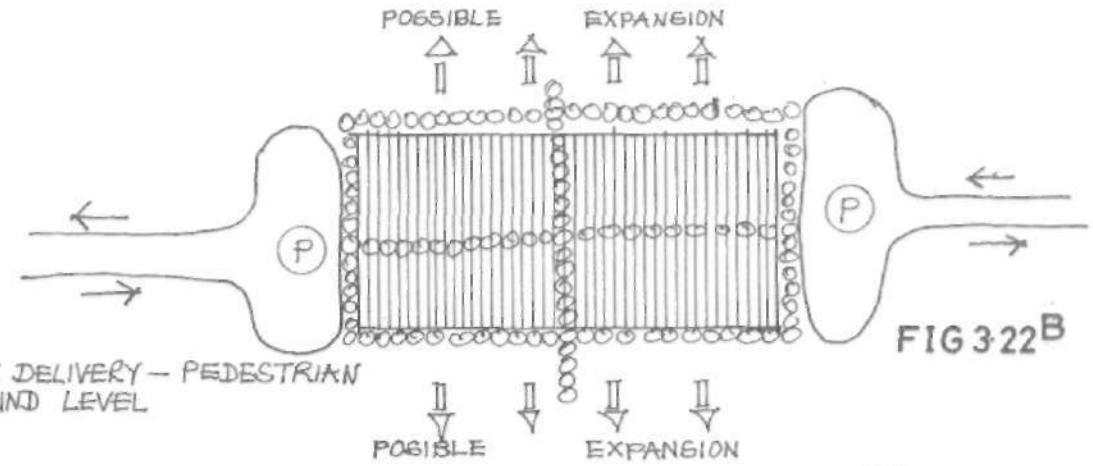
This like (fig 3.20A) makes it possible for free pedestrian shopping. Ample parking space on the periphery allows for delivery trucks to service shops without inconvenience.

CONCEPTS FOR CITY CENTRES



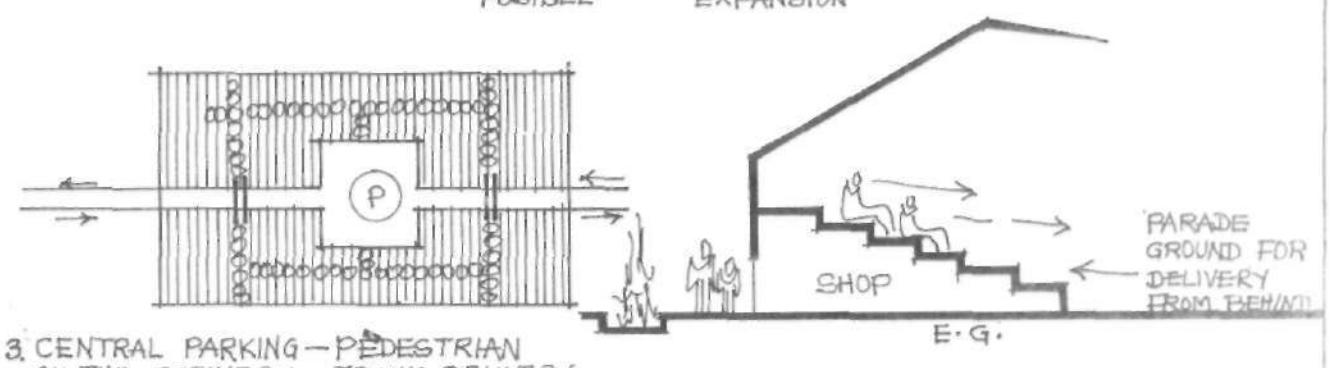
1. CENTRE PEDESTRIANISED WITH OVERHEAD PEDESTRIAN BRIDGES

FIG 3·22A



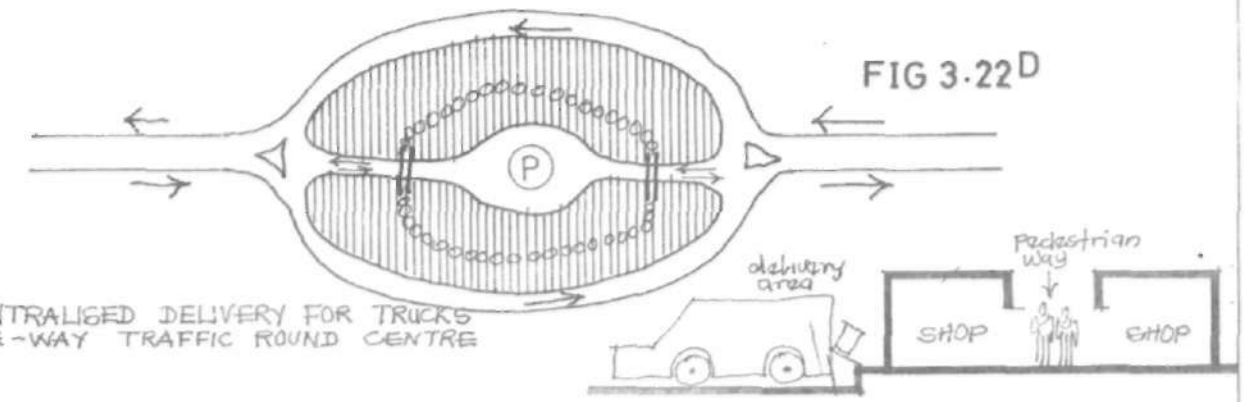
2. TRUCK DELIVERY — PEDESTRIAN GROUND LEVEL

FIG 3·22B



3. CENTRAL PARKING — PEDESTRIAN ON THE PERIHERY — TRUCKS DELIVERY FROM MAIN PARKING

FIG 3·22C



4. CENTRALISED DELIVERY FOR TRUCKS ONE-WAY TRAFFIC ROUND CENTRE

FIG 3·22D

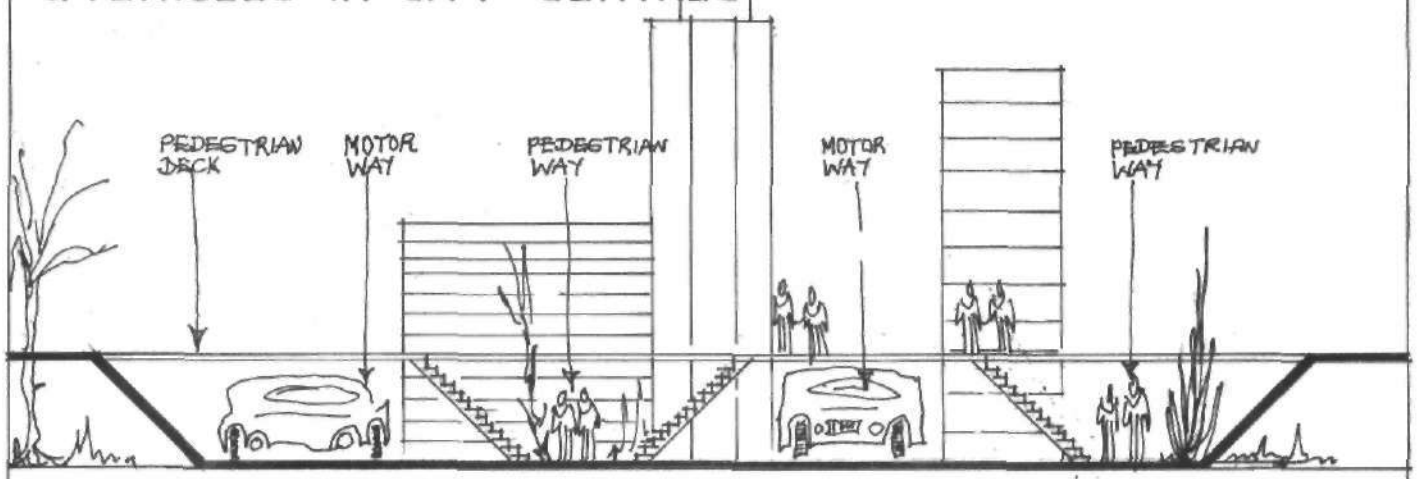
FIG 3.22

(ii) Pedestrian precinct with parking at Ends (fig 3.22B)
In this centre, the two ends are bounded by parking lots. The traffic is two way. Advantage of this centre is that it can expand easily along thosesides that are not bounded by parking lots.

(iii) Pedestrian precinct with centralised parking (fig 3.22C)
Here all traffic to the city centre park in the central parking lot. Visitors used pedestrian walkways to their shopping and if they have to cross the road they use the overhead bridges or under passess. A typical example of this type of centre could be say a parade ground/stadium which is used also as shopping centre.

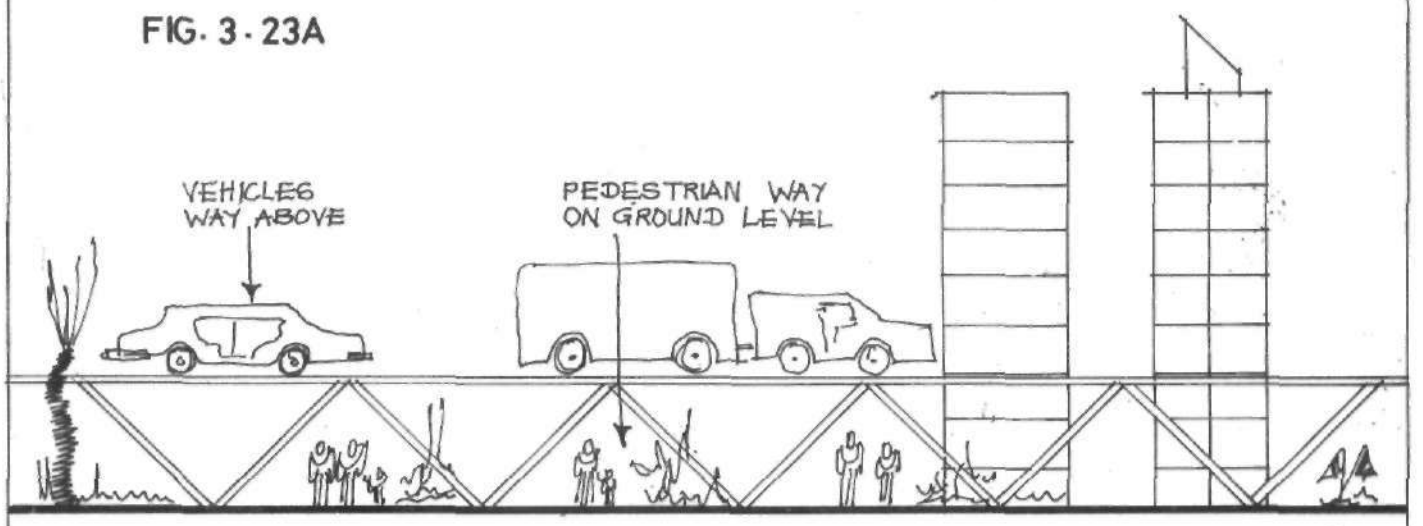
(iv) Centralised delivery for trucks and one-way traffic round centre (fig 3.22D)
A centralised road and parking exclusively for trucks delivery. Advantage is that visitors' traffic and the delivery are completly separated. This make for better delivery of goods and security.

POSSIBLE WAYS VERTICAL SEPERATION OF PEDESTRIANS &VEHICLES IN CITY CENTRES



1. PEDESTRIAN DECK RAISED ABOVE THE LEVEL USED BY VEHICLES

FIG. 3·23A



2. PEDESTRIANS AT GROUND LEVEL AND VEHICLES RAISED ABOVE THEM

FIG.3.23B

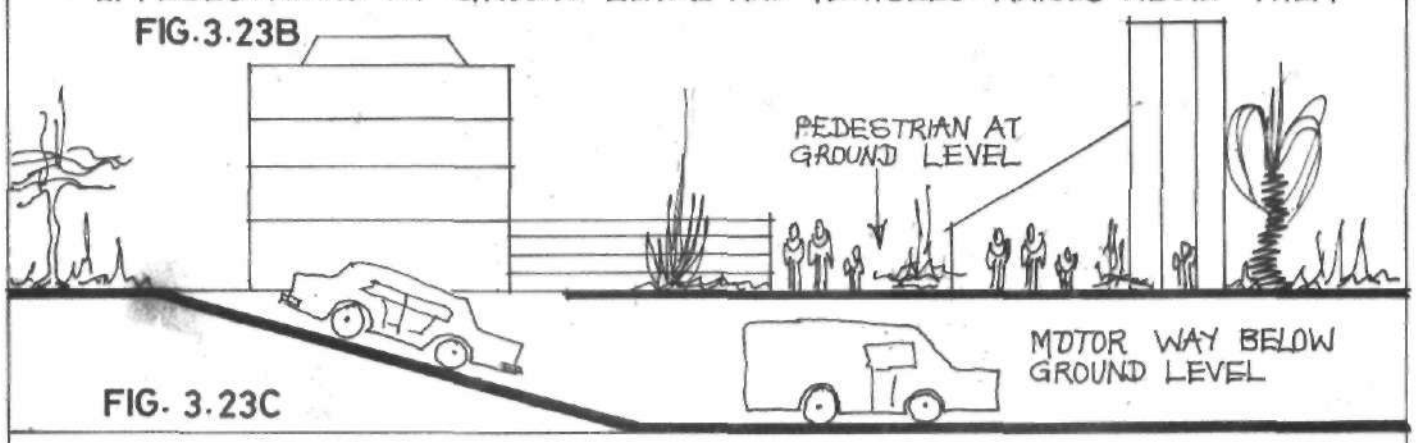


FIG. 3.23C

3. PEDESTRIANS AT EXISTING GROUND LEVEL AND VEHICLES BELOW

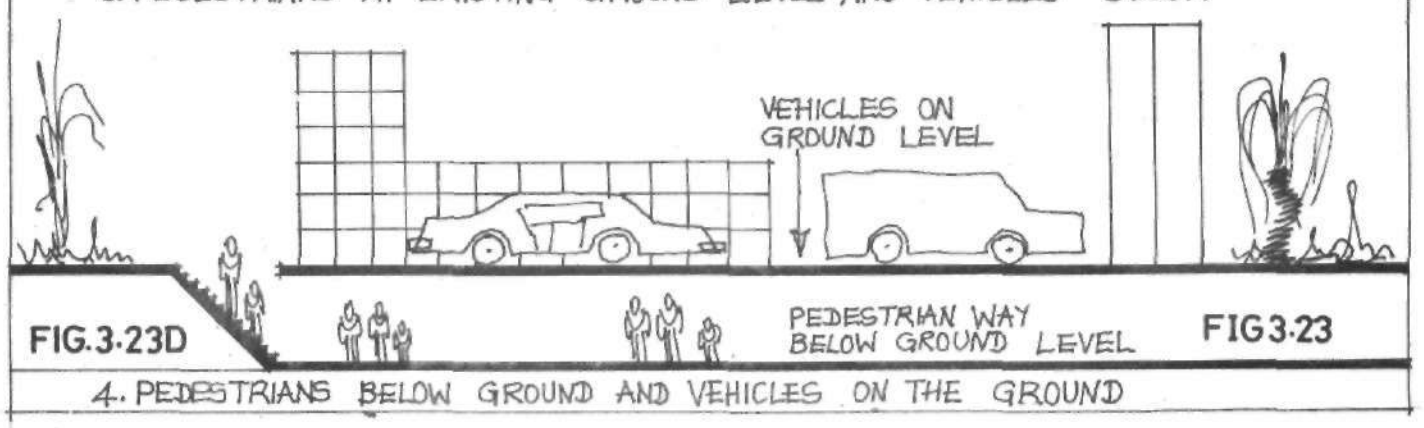


FIG.3·23D

FIG3·23

4. PEDESTRIANS BELOW GROUND AND VEHICLES ON THE GROUND

3.54 Vertical separation of pedestrians and vehicles in the City Centres (fig 3.23)

The author proposes four different ways of which pedestrian and vehicular traffic can be separated(fig 3.23) Fig 2.23A - Suggest pedestrian deck raised above the level used by vehicles. Advantage: relatively light and inexpensive deck will suffice because it only has to carry pedestrians. Fig 3.23B - Pedestrians at ground level and vehicles raised above them. This has the disadvantage of requiring heavier construction, therefore expensive. Fig 3.23C - pedestrians at existing ground level and vehicles below. Disadvantage: Cost of tunnelling equal to constructing vehicle deck. Also expensive. Fig 3.23D pedestrians below ground and vehicles on the ground level. Disadvantage: on only exceptional cases because buildings will have to be drastically modified cost of tunnelling for pedestrians as high as for vehicles.

In all the various concepts of city centres identified and proposed, the pedestrian precinct seems more convenient and functional to the need of Kaduna city centre. The author hopes to use this in the proposal for the

city centre design. However, in achieving this other considerations will be considered. These include the (1) attractiveness, (2) functionality, (3) accessibility, (4) economy and (5) flexibility.

1. Attractiveness - possible to attain by means of:
   (a) formation of multi-functional service complexes with a varying and attractiveprogram.
   (b) introduction of relatively high efficiency of concentration of floor area filled with central functions.
   (c) obtaining a suitable level of spatial composition of the whole and architectural values of certain objects.

2. Functionality - obtained through:
   (a) integration of the existing and the newly designed town centre.
   (b) introduction of a predestermined order in traffic by segragating pedestrian and car traffic as well as in the traffic connected with supply of consumption goods.

3. Accessibility - obtained by means of:
   (a) improving and maximum reduction of communication time to the town centre from residential areas, using means of public and individual transport,
   (b) providing parking possibility for the rapidly increasing number of cars.

4. Economy - is reaching the solutions through:
   (a) intensive and proper utilization of land representing the highest social value in town.
   (b) appropriate adaptation and utilization of existing objects for the town centre,
   (c) successive elimination of functions improper for the town centre.

5. Flexibility - attained through security *developmental chances of the town centre and protection of* any further changes and alterations to be done for area usage in future.

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2. Prof. S. Juchnowicz -(1978) - problems of the contemporary city centres - A public lecture dept U.R.P. A.B.U. - ZARIA

3.60 Site Analysis

3.61: Site Analysis

The Mogadishu site is located to the west of Ahmadu Bello Way between the ABW/hospital road roundabout and NEPA offices. The boundary on the west is with the railway line. On the south by the hospital road and on the north by the military and Ministry Workshops.

The land gradually rises from the sourthern part towards the northern part. From the western part, a good view of Ahmadu Bello Way could be seen. Thick mango trees exist towards the south-western part. Presently bus and Taxi drivers have created a road across the site to avoid the typical traffic congestion along Ahmadu Bello Way (ABW). The soils are generally good with remnants of demolished former barracks seen. Drainage of site towards the south.

3.70 **Schedule of Requirements**

3.71 EXPECTED USES WITHIN CITY CENTRES

1. Shops (whole & retail)
2. Markets
3. Cafe's
4. Restaurants
5. Public houses
6. banks
7. Post offices
8. dry cleaners
9. building society payment office.
10. House agents
11. Offices (professional & commercial)
12. Municipal offices
13. Dept. of Central Govt.
14. Supermarkets.
15. Market
16. Office of statutory Undertaken
17. Clinics

(18) Cinemas

(19) Theatres (closed & open air)

(20 Dance Halls

(21) Concert Halls

(22) Meeting Halls

(23) Art galleries

(24) Museums

(25) Libraries

(26) Churches) requires
) seclusion
(27) Mosque) less for visits than other bigs.

(28) Civic Head quarters) L.G.A HQrs
) State HQts
) (state assembly)

(29) Hotels

(30) Stadium

(31) State Secretariat.

(32) State assembly.

(33) Fire Station.

Function within Stevengage Town Centre

2. Stevenage New Town

Function	Area in Acres	% of city centre covered
1. Public Library	0.50	0.71%
2. Dance Hall	0.85	1.20%
3. Cinema	0.60	0.85%
4. Swimming Pool	1.20	1.69%
5. Youth Centre	0.90	1.27%
6. Church	1.25	1.77%
7. Town Hall Council - chambers & admin. office	2.1	2.97%
8. Health Centre	0.50	0.71%
9. Out-patients clinic	1.20	1.69%
10. Town Park	7.25	10.25%
11. Apprentices' hostel	1.10	1.55%
12. Shops	16.00	22.61%
13. Office	11.50	16.25%
14. Head Post office	1.25	1.77%
15. Police station	1.20	1.69%
16. Fire Station	0.80	1.13%
17. Bus Station	0.85	1.20%
18. Bus Garage	2.25	3.18%
19. Service & petrol filling station	1.25	1.77%
20. Car parks	18.20	25.72%
	70.75	100%

Standard for Socio-Cultural & Religious Facilities

	Facility	Population served by the facility	Required Area in Hectare
1.	Community Centre	10,000 - 25,000	1.2
2.	Blind Workshop	whole city	0.5
3.	School of blind child.	whole city	2.8
4.	Children's home	250,000	1
5.	Home for the aged	250,000	1
6.	Rehabilitation centre	250,000	1
7.	Library	--	--
8.	Reading roomsq	25,000-50,000	0.6
9.	Public T.V. Stand	--	--
10.	Post Office	30-45,000	0.5
11.	Museum	Whole city	1
12.	Theatre	120,000-128,000	1.2
13.	Cinema	40,000-60,000	
14.	Cementries/burial ground	50,000-100,000	3
15.	Church/Mosque	50,000-15,000	0.5
16.	Central Mosque	40,000-50,000	1.0
17.	Large Prayer Ground	whole city	13

Functions within HarLow Town Centre

3. Harlow New Town = pop = 90,000
Area of Town = 2,500 Ha; Area of C.C. = 28.2Ha i.e. 1.128% of whole city.

	Function	Area in Acres	% of city centre covered	
(i)	Roads & other site works			
(1)	Perimeter Highways & Roundabouts (including verges, footpaths, etc.)	14.12	16.71%	
(2)	Internal roads	6.26	7.41%	
(3)	Cycle track	0.36	0.43%	36.47 Acres (43.18%)
(4)	Car & cycle parks	5.75	6.81%	
(5)	Paved areas & service yds.	9.50	11.25%	
(6)	Bus laybys	0.48	0.57%	
(ii)	OPEN SPACES			
(7)	Small landscaped Areas	3.50	4.14%	13.73 Acres - (16.25%)
(8)	Civic Gardens	2.88	3.41%	
(9)	Natural landscaping	7.35	8.70%	
(iii)	COMMERCIAL BUILDINGS			
(10)	Shopping and Ancillary uses (Banks & licensed premises excluding Hotel)	12.03	14.24%	
(11)	Service Courtyards	2.80	3.31%	20.19 Acres - (23.89%)
(12)	Hotels (including garden)	0.63	0.75%	
(13)	Entertainment Bldgs (including theatre)	2.17	2.57%	

	Functions	Area in Acres	% of city centre covered	
14.	Service & lock-up garages, stores etc.	1.81	2.14%	
15.	Professional offices	0.75	0.88%	
(iv)	PUBLIC BUILDINGS			
16.	Church	0.64	0.76%	10.50 Acres
17	Civic Group (excluding thearter	1.61	1.91%	
18.	Library	0.30	0.35%	
19.	College of further Education	5.24	6.20%	12.42%
20.	Courts, Police Station Crown offices	1.71	2.02%	
21.	General Post office	0.90	1.06%	
22.	Waiting & Cloakrooms	0.10	0.12%	
(v)	BALANCE - Minor open spaces verges, etc.	3.58	4.24%	
		84.47	100%	

3.72 Functions Existing & T_o be provided

	Functions expected in Kaduna City Centre area	Existing	To be provided
1.	Central Market	X	P
2.	Cinema	-	P
3.	Offices (business)	-	P
4.	Banks	-	P
5.	Supermarkets and shops	-	P
6.	Shopping complex	-	P
7.	Hotel	-	P
8.	Restaurants & Sback bars	-	P
9.	Showrooms and special services	-	P
10.	Wholesale & Warehousee	-	P
11.	Professional Offices	-	P
12.	Theatre	-	P
13.	Petrol Filling Station	-	P
14.	Hawkers Stand	-	P
15.	Retail and Service Shops	-	P

X - Existing
P - To be provided

	Functions Expected in our City Centre	Existing	To be provided
1.	Printing Press	--	P
2.	Workshops & Tailoring	--	P
3.	Bakeries	-	P
4.	Dry Cleaning	--	P
5.	Electronics	--	P
1.	House of Assembly	X	--
2.	City Hall	--	P
3.	Government Offices	X	--
4.	Library	--	P
5.	Local Govt. Offices	X	--
6.	Museum (military & contemplorary)	--	P
7.	Arts & Crafts Centre	--	P
8.	Government Guest House	X	--
9.	Foreign Consulates	--	P
10.	Central Mosque	--	P
11.	Central Church	--	P
12.	Large Pray Ground (Moslem)	X	P
13.	Civic Square	--	P
14.	Magistrate Court	X	--
15	High Court	X	--
16.	Sharia Court	X	--
17.	Housing Office	--	P

X - Existing
P - To be provided.

		Functions Expected in our City Centre	Existing	To be provided
D:- Sports	1.	Stadium	X	-
	2.	Sport Hall	X	--
	3.	Gymnasium & Indoor Games	-	P
	4.	Swimming Pool	-	P
E:- Services	1.	Motor Park	X	-
	2.	General Post office	X	-
	3.	Post Offices	-	P
	4.	Telephone Exchange	X	P
	5.	Police Station	-	P
	6.	Fire Station	-	P
	7.	Public Toilets	-	P
F:-Residential.	1.	Residential Flats	-	P
	2.	Single family Flats	-	P
	3.	Residential Mixed with service shops	-	P

X - Existing

P - To be provided.

	Functions Expected in our City Centres	Existing	To be provided
1.	City Park	X	--
2.	Multi-purpose square	--	P
3.	Small landscaped areas	--	P
4.	Civic Gardens	--	P
5.	Natural landscaping	--	P
6.	Government Garden	X	--

X - Existing

P - To be provided

3.73 Schedule of Requirements and Space Standard

Functions	Area in Hectares	% of total area
A - Commercial Business	21.69	37.4
B - Light Industries	1.39	2.4
C - Sports	1.16	2.0
D - Services	5.16	8.9
E - Residential	3.54	6.1
F - Admin. & Govt. Blgs.	11.60	20.0
G - Health Facilities	2.90	5.0
H - Roads, Streets & Site Works	4.64	8.0
I - Parks & open spaces	5.92	10.2
	58.0	100.00

Standards Calculated for YR. 2,000 with pop = 3.4 million estimated
Required area of city centre 1,232 Ha

Func - tions	Elements	Standard Used	No. Prop.	Area in Ha	No. Exis- ting	Exis- ting Area in Ha	No. RQ	No. Prop. for C.C.	Area RQ in Ha	% of Site Cov.	No of floors	Pkg car spaces/ Ha	RMKS
A:- Commercial Business	1. Cinema	To seat 1,500/ 500,000	7	7.0	4	2	3		3.0	0.87	1-3	20/100	
	2. Offices (business)	--	--	15.0	-	5	-		10.0	2.0	4	40-60	
	3. Banks	1/30,000	113	10.0	25	2.25	88		7.75	--	1-3	25-40	Need fo Imm. Ad Nos.
	4. Supermarkets and Shops	1/100,000	34	8.5	5	1.25	29		3.75	14.25	1-3	40-60	
	5. Shopping Complex	--	--	3.0	-	-	-		3.0	--	1-2	40-60	
	6. Hotel	1/250,000	14	4.0	3	1.0	11	1	3.0	0.75	4	2 per guest	250 bed 5 star Hotel.
	7. Restaurant & Snack Bar	To seat 300 / 250,000	14	1.26	4	0.18	10		1.08	--	1-2	1 for 2-guest	
	8. Showrooms & special services	1 shop/ 10,000	340	5.00	300	3.00	40		2.00	--	1	25-40	
	9. Wholesale and Warehouse	--	--	12	--	1	--		11.00	--	1-2	25-40	
	10. Professional Offices	--	--	10.8	--	2	--	8.8	8.8	0.88	4	2 per office space	

	Func-tions	Elements	Standard Used	No. Prop.	Area in Hacter	No Exis-ting	Exis-ting area in Ha	No.RQ.	No. Prop. for C.C.	Area RQ in Ha	% of Site Cov.	No. of floors	Pkg. spaces Ha	RMKS
A:- Commercial Business	11.	Theatre	1/120,000	28	10.8	--	--	28	1 twin	10.8	--	1	1 for 2-Vis.	
	12.	Petrol fill-ing station	1/100,000	34	8.0	10	3.5	24	2	4.5	--	1	1 for 2-Vis.	
	13.	Hawkers Stand	--	--	6	vrd.	2.0	vrd.	-	4.0	--	1-2	--	Loosely defined spaces.
	14.	Retail Service Shops	1-shop/ 40	85,000	85.00	82752	13.0	167752	-	72.0	--	1-2	---	--
B:- Light Industries	1.	Printing Press	--	6	3.0	3	--	3	3	3.0	--)	1-2	--	--
	22.	Workshops & Tailoring	--	--	--	vrd.	--	--	15	2.0	-)	1-2	--	--
	3.	Bakeries	1/30,000	60	12.0	3	--	57	4	2.0	--) 8%	1	--	--
	4.	Dry Cleaning	1/100,000	--	--	vrd.	--	--	5	2.5	--)	1-2	--	--
	5.	Electronic	--	--	--	--	--	--	-	--	--)	--	--	Along wit Shops & S/Markets
C:- Sports	1	Gymnasium	1/100,000	30	--	--	--	--	1	1.5	--)	1	-	Could come along wit Hotel
	2.	Swimming Pool	1/100,000	30	--	--	--	--	1	1.5	--) 2%	--	40-60	

	Func-tions	Elements	Standards Used	No. Prop.	Area in Ha	No Exis-ting	Exis-ting area in Ha	No.RQ	No. Prop. for C.C.	Area R.Q. in Ha	% of Site Cov.	No. of floors	Pkg car spaces/ Ha.	RMK
Di- Services	1.	Post offices	1/100,000	30	15.0	1 large	3.0	14.	2	1.0	-	1-3	25-40	postal agencie
	2.	Police station	1/50,000	60	--	2	3.5	58	1	1.5	-	1-2	40-60	--
	3.	Fire Station	1/100,000	6	12	1	2.0	5	1	2.0	-- 10%	1-4	25-40	--
	4.	Public Toilets	1/25,000	120	--	--	--	120	6	2.5	--	1	--	Distri-buted within site
Et- Residential	1.	Residential	1/ --	--	--	--	--	--	5	5.0	--	4	2 per flat	--
	2.	Single family flats	--	--	--	--	--	--	2	2.0	-- 6%	4	1 per flat	--
	3.	Residential Mixed with service shops	--	--	--	--	--	--	5	5.0	--	4	2 per flat	Could be with (1) above.

Functions	Elements	Standard Used	No Prop.	Area in Ha.	No. Existing	Existing area in Ha.	No.RQ	No. prop for C.C.	Area RQ in Ha	% of Site Cov.	No.of flrs.	Pkg car spaces/ Ha.	RMKS
F:- Administrative & Government Buildings													
1.	City Hall	1/whole city	1	1.5	--	--	1	1	1.5	--	4	50-60	--
2.	Library	1/100,000	34	51	6	9.0	28	1	1.0	--	4	50-60	Existing N/M.
3.	Museum	1/whole city	1	1.5	1	1.0	1	1	1.0	--	1-2	30-40	
4.	Arts & Crafts Centre	1/whole city	1	1.5	-	-	1	1.0	1.5	--	1-2	30-40	
5.	Foreign Consulates	--	10	5.0	4	2.0	6	3.0	4.0	--	4	2 per guest	--
6.	Friday Mosque	1/50,000	68	68.0	7	9.0	61	1	3.0	-- 25-30%	1	"	--
7.	Central Church	1/50,000	68	34.0	4	3.0	64	1.0	2.0	--	1	1 for 2-guest	
8.	Civic Square	---	--	3	--	--	--	--	--	--	--	no pkg.	--
9.	Housing Office	--	--	--	--	--	--	1	0.5	--	--	40-50	--
G:- Health Facilities.													
1	Health Clinic	1/50,000	68	34.0	--	--	68	1	0.5	--	1-3	30-40	--
2.	Specialist Hospital	1/whole city	--	--	--	--	1	1	5.0	-- 10%	1-4	50-60	--
3.	pharmacist shops	1/50,000	68	--	--	--	68	8	4.0	--	1-4	40-50	Could come along with S/Mar

Functions		Elements	Standard Used	No. Prop.	Area in Ha.	No. Existing	Existing Area in Ha	No.RQ	No. prop. for C.C.	Area RQ in Ha.	% of Site Cov.	No. of flrs	Pkg car spaces/ Ha.	
H:- Roads, Streets & other Site works	1	Perimeter Highways, Roundabouts, Footpaths									) 12% of total area for C.C.			
	2.	Internal roads												
	3.	Cycle track												
	4	Car & Cycle parks												
	5.	Multi-Storey Car park												
	6.	Paved areas & service yards												
	7.	Bus laybys												
I:- Parks & Open Spaces	1.	Multi-purpose Square	--	--	15.0	--	--	--	1	3.0	3%-)	-	--	--
	2.	Small land scape areas	--	--	--	--	---	--	--	--	-) 10	--	--	To be design. along with o/space
	3.	Civic gardens	--	--	--	--	--	--	--	--	--)	--	--	--
	4.	Natural L/scap.	--	--	--	--	--	--	--	--	--)	-	--	--

CHAPTER 4

4:00 City Centre Plan

4:10 Constrains

4:20 Design Criteria

4:30 Factors affecting general concept of Design.

4:40 General concepts of Design

4:50 Design Proposals

4:60 Proposed services utilities system.

4:10 Constrains:

The design is to be within the acquired land of Mogadishu area and N.B.C. (Nigerian Broadcasing Corporation) Mogadishu Site (*Mogadishu area and* N.B.C.) *has a total* area of 58 hectares. Mogadishu area occupies an area of 48 hectares while the N.B.C. site an area of 10 hectares. Existing railway and roads constitute constrains to development. Development can not go beyond this site as it is restricted by strongboundaries. To the west it has the railway line, on the east Ahmadu Bello Way, on the south the market and towards the north NEPA offices and military Workshops.

1. Topography:
   Generally the area within the existing site is flat and= suitable for development. Drainage of rain water towards the south. Existing mango trees with the age of about a century to be preserved and incorporated into the design to provide for green areas.
2. Built up Areas:
   The N.B.C. site which houses the radio station of the site with an area of 10Ha should be acquired and alternative site provided. Present land to be incorporated with the overall city centre design.

4:20 Design Criteria:

As mentioned earlier, five criteria were used in the design; they are: (1) functionality, (2) accessibility (3) flexibility, (4) attractiveness and (5) economy.

1. Functionality: This has been the main criteria governing the grouping of functions and their relationship. The grouping together for maximum interaction and relating each group of function to surrounding landuses.

2. Accessibility: Adequate accessibility is a necessity of any effective functioning of a city centre. The centre has been designed with regional routes to all the sides. Two main east-west routes help bring and remove traffic to and fro the centre.

3. Flexibility: The useful time for city centre is about 20 years and including decision making and construction It will take up to say 2020 AD. A lot of changes would have taken place within the period. In this case the design must be functional and structurally flexible to accommodate transition and re-organisation

4. Artractiveness: City centre must be attractive with lots of panaromic views. Emotional delights full of surprises should exist everywhere to give a pleasant and relaxing mood to visitors. Beautification and landscape that are interesting and inspiring will be part and parcel of the design. It is the hope of this thesis that the whole centre will be designed with attractive units. Impressive and dorminant gates will be designed. Variety of buildings will also make the centre attractive.

5. Economy: Economy will be achieved by removal of waste. As already mentioned, existing central facilities like house of assembly, stadium, high courts, etc. will not be repeated in the city centre design. Provision of road networks are minimised to the minimum required. Designs are to be of simple structures.

4:30 Factors affecting general concept of Design:

The following factors have been considered in the development of the design of city centre:-

(i) Hierarchy of centres

(ii) Hierarchy of roads

(iii) Integration of the existing commercial strip with the new city centre.

(iv) Integration of the existing green areas with the new city centre.

(vi) Consideration of important central activities like commercial, light industrial, public and semi- public functions, transportation and traffic networks, etc.

(vii) Provision of public facilities and utilities.

(viii) Waste collection and disposal system

(ix) Phasing programme.

kaduna town showing hierarchy of centres

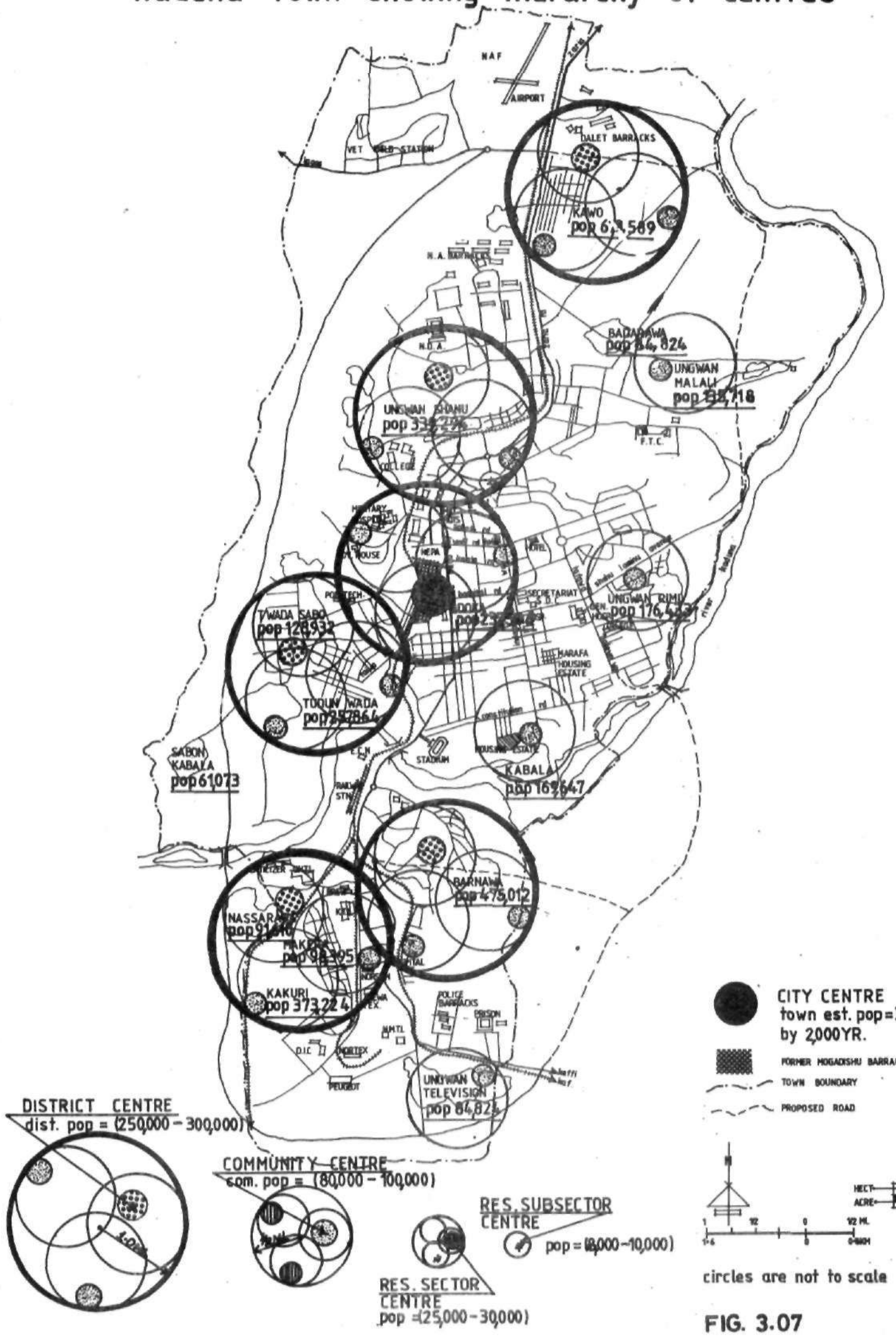


FIG. 3.07

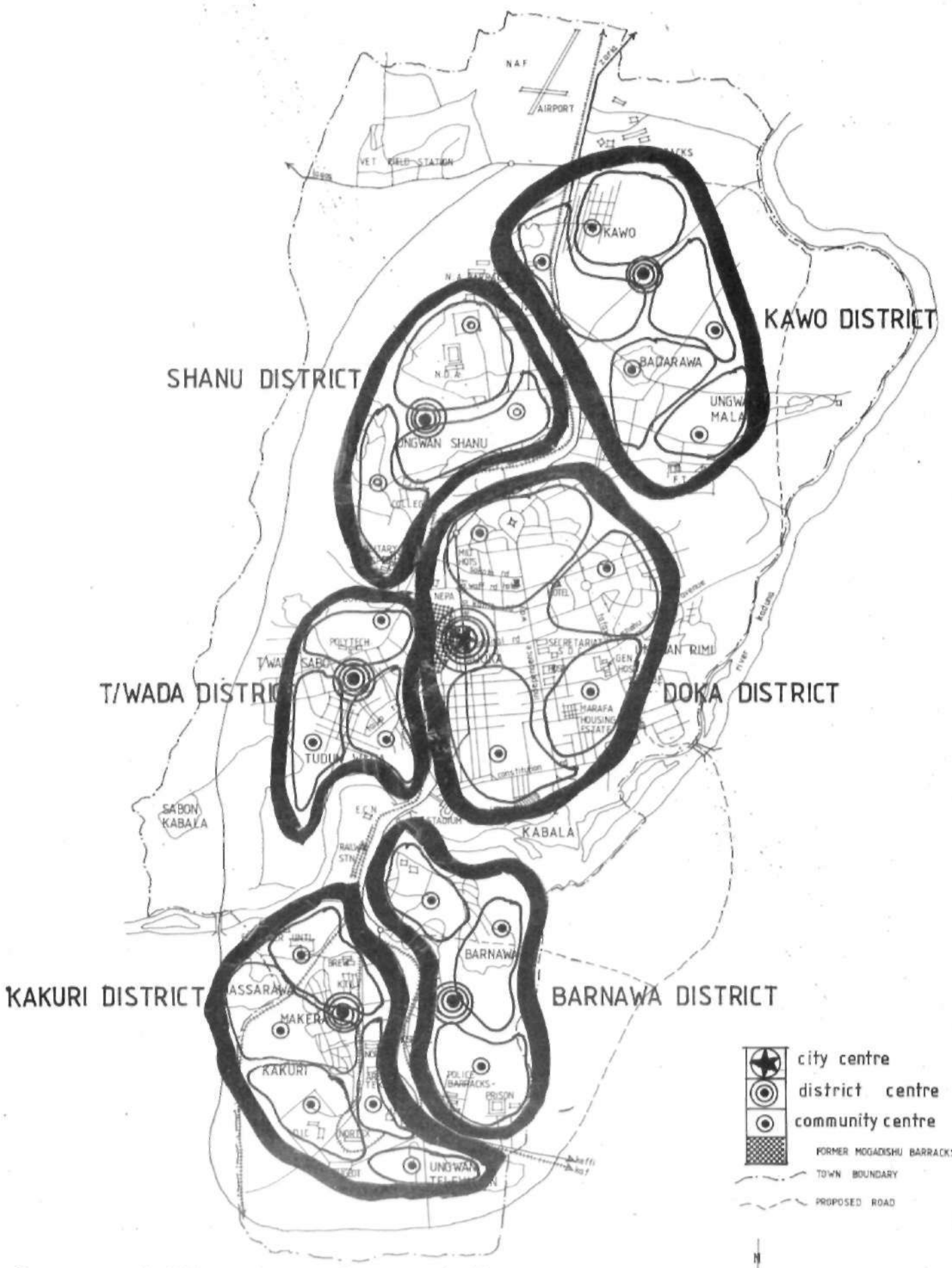
(i) Hierarchy of centres (fig 3.07):

The hierarchy of centre proposed for the whole town provides for a convenient and evenly distributed central amenities within the town and reduces the demand on the city centre. Thus, making the new city centre more efficiently operated.

(ii) Hierarchy of roads (fig 3.09):

The proposed pattern of road network provides a direct and strong relationship between the industrial area and the town centre. As shown in fig 3.09 the road pattern integrates the existing roads and provides easy and convenient accessibility to the central zone of the town. Hierarchy of roads used are as follows:

(a) Federal road (Highway). It is a regional road and acts as the east-west connections. It connects the other parts of the town and the industrial area directly to the city centre and removes traffic quickly from the centre. A right-of-way of 90.0m has been proposed for this road.
There should be two lane each of 3.5m width, 3.0m shoulders on both sides. Fly-overs at ABW/ hospital road roundabout and new junction at the railway crossing provides for easy access.



Proposed Structure Concept For District Centres

(b) Major arterial roads (2nd order roads of 60.0m right-of-way are provided to ease the load of the regional routes and allow for alternative routing.

(c) Arterial roads (3rd order roads of 45.0m right-of-way) has been proposed to connect the residential units with the centre.

(iii) Integration of existing commercial strip and market:
The existing commercial strip along ABW, hospital road, Waff road, Kanta road, etc. has been incorporated into the new centre with defined pedestrian movements connecting them. The existing market has been made part and parcel of the whole design towards the southern part of the site. The N.B.C site which will eventually serve for light industries, mini-markets and hawkers, make for a gradual introduction into the new modern city centre in the Mogadishu Site. Pedestrians under pass crossings with where it meets motor traffic allows safe and convenient movement.

Hierarchy Of Road Network In Kaduna

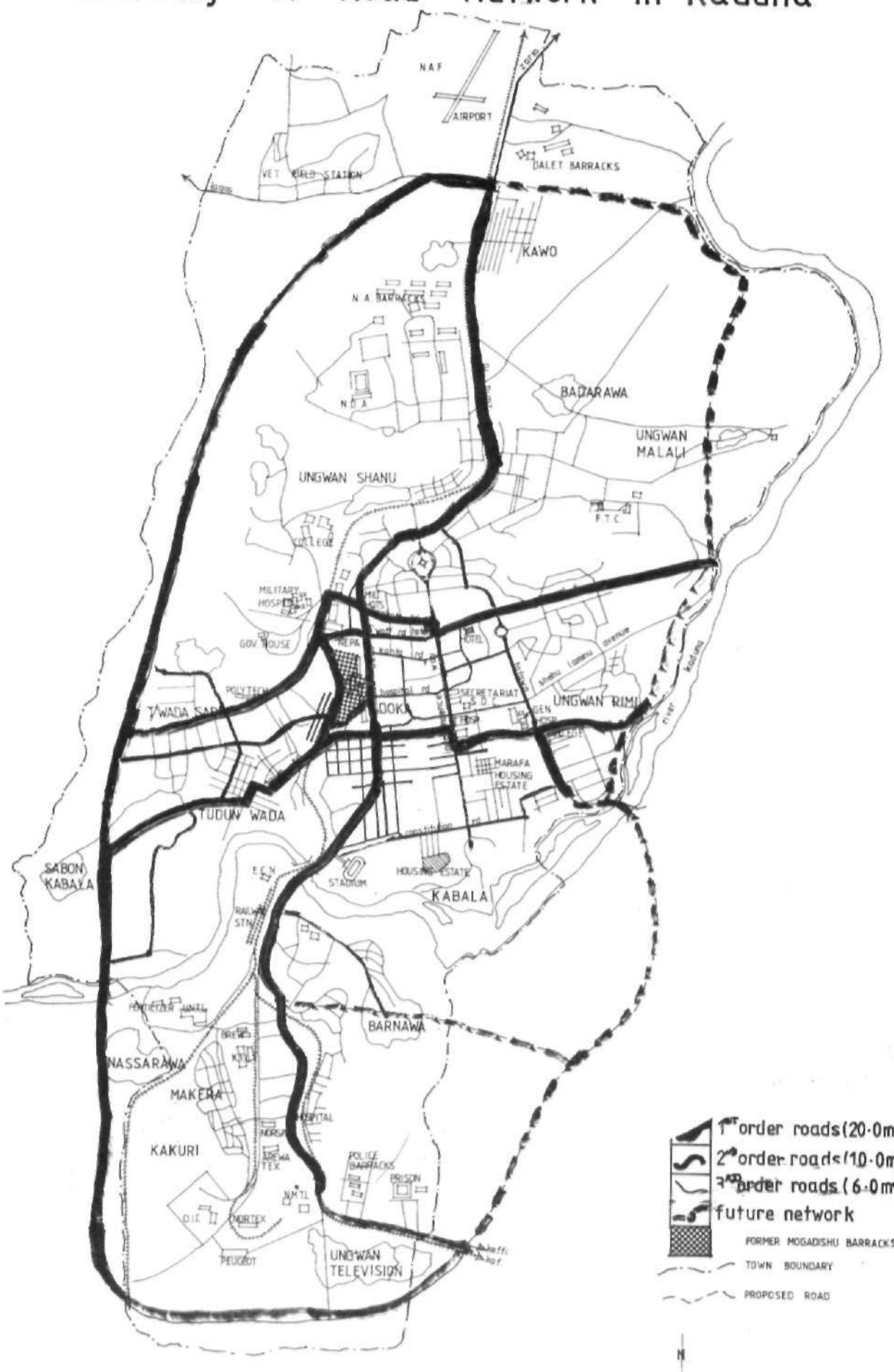
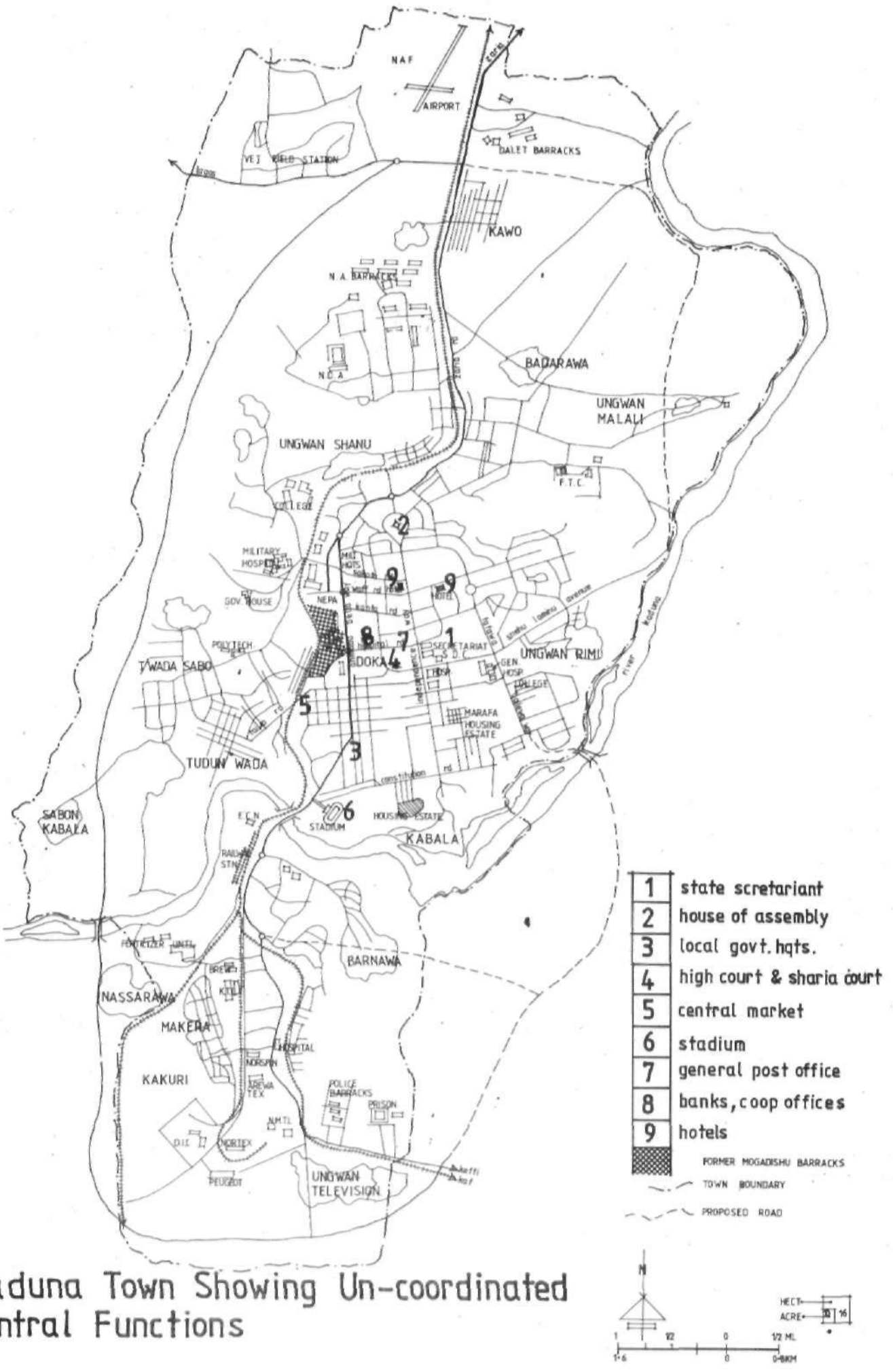


FIG 3·09

(iv) Integration of existing green areas:
The basic objective of providing green system of linked open-spaces is to enhance the quality of the total environment and by improving the micro-climates. Existing garden along hospital road and behind ABW to the east has nicely been connected to the new city centre by pedestrian ways and green. This follows the traditional concept of generous open spaces within city centres.

(vi) Consideration of important central activities:
These activities are so located within the city centre so as to lead to a gradual introduction from the traditional existing market to the modern new city centre.

(vii) & (viii) & (ix) These factors are later discussed.



Kaduna Town Showing Un-coordinated Central Functions

4:40 General Concept of Design: (see conceptual frame work)

Several considerations governed the design concepts:

(i) The principle of an indegenous design that is accetable to the locals of the town. Provision of a town centre that will be harmoniously integrated to the existing situation of the town As much as possible uses are located such that functional relationship with the surrounding landuses are achieved.

(ii) Traditional elements of open spaces, square and greenery are incorporated into the design. Green pedestrian movements are used to connect the new city centre to existing related central functions. For proper functioning, covenient, safe and attractive centre the design is conceived as a pedestrian precinct. In all the proposals, this is seen proposed. Parking spaces and streets are provided on the periphery of the site.

Conceptual Framework for the Design

Factors Influencing

1. Rapid economic development & changing needs
2. Socio-cultural heterogeniety.
3. Modern concepts of social organisation and order

R E Q U I R E M E N T S

1. Vehicular circulation
2. Building Structures and Engineering.
3. New business and commercial functions.
4. Modern government.

Design Instruments

1. Grouping of functions and buildings
2. Relationship between functions and buildings
3. Size, height, shape and decoration of buildings.

Design Principles & concepts

1. Compactness and development due to high land value.
2. High parking index due to high traffic volume.
3. Variety & contrast of building forms.
4. High value of decorations to conform with traditional architectural values.
5. Open spaces & squares to conform with traditional concepts.
6. Unity & conformity.
7. Pedestrianised centre.

Design Proposals

1 Relationship of landuses & transportation

2. Provision of mixed landuses & functional overlapping.
3. Containment of traditional & modern functions with modern architectural forms and solutions with simplification in design.

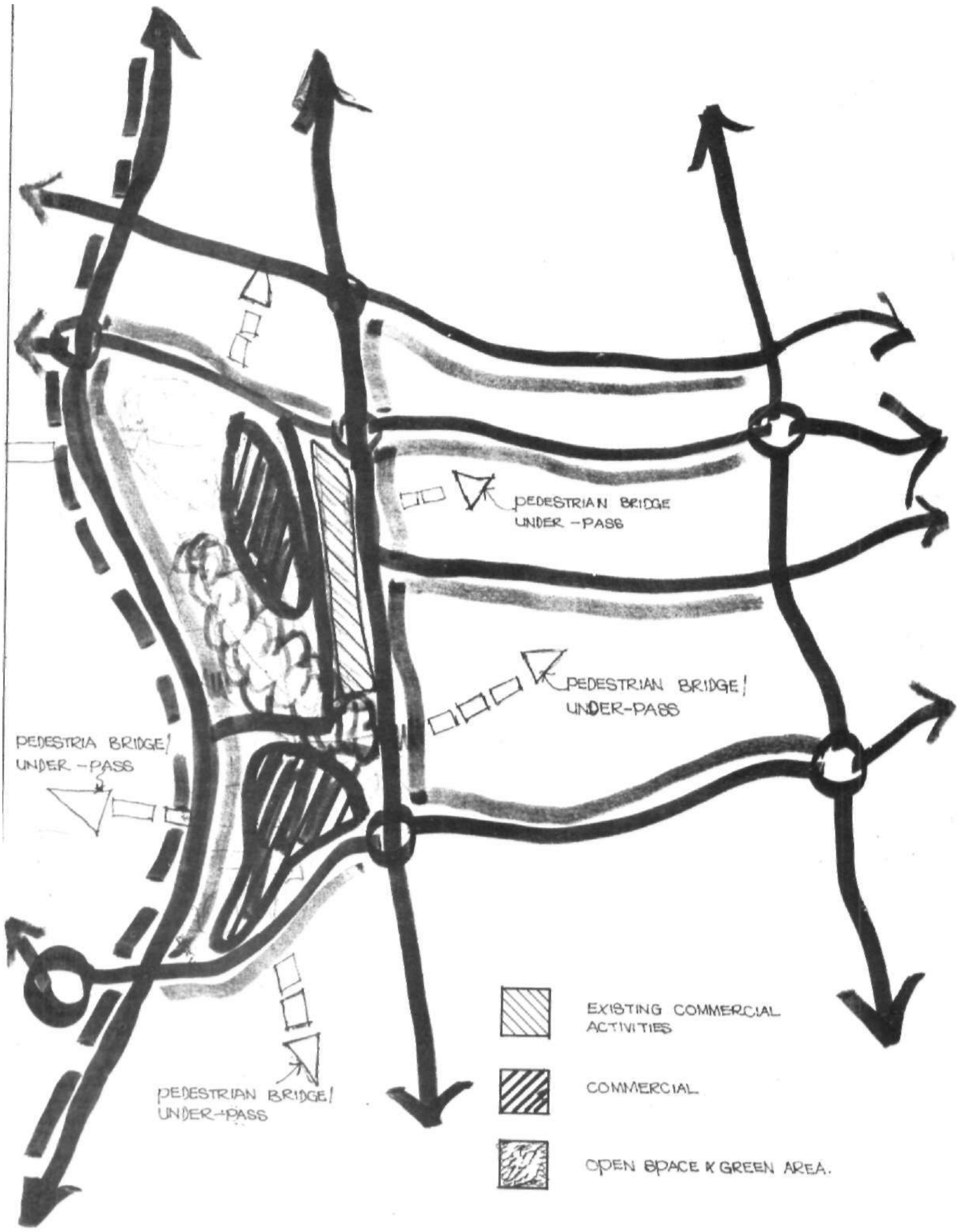
4:50 Design of Proposals:

The city centre design offers the most welcomed opportunity for correcting and improving the present defficiencies. The non existance of any well defined city centre to serve the Kaduna town makes this opportunity an urgent one so as to avoid further waste of resources.

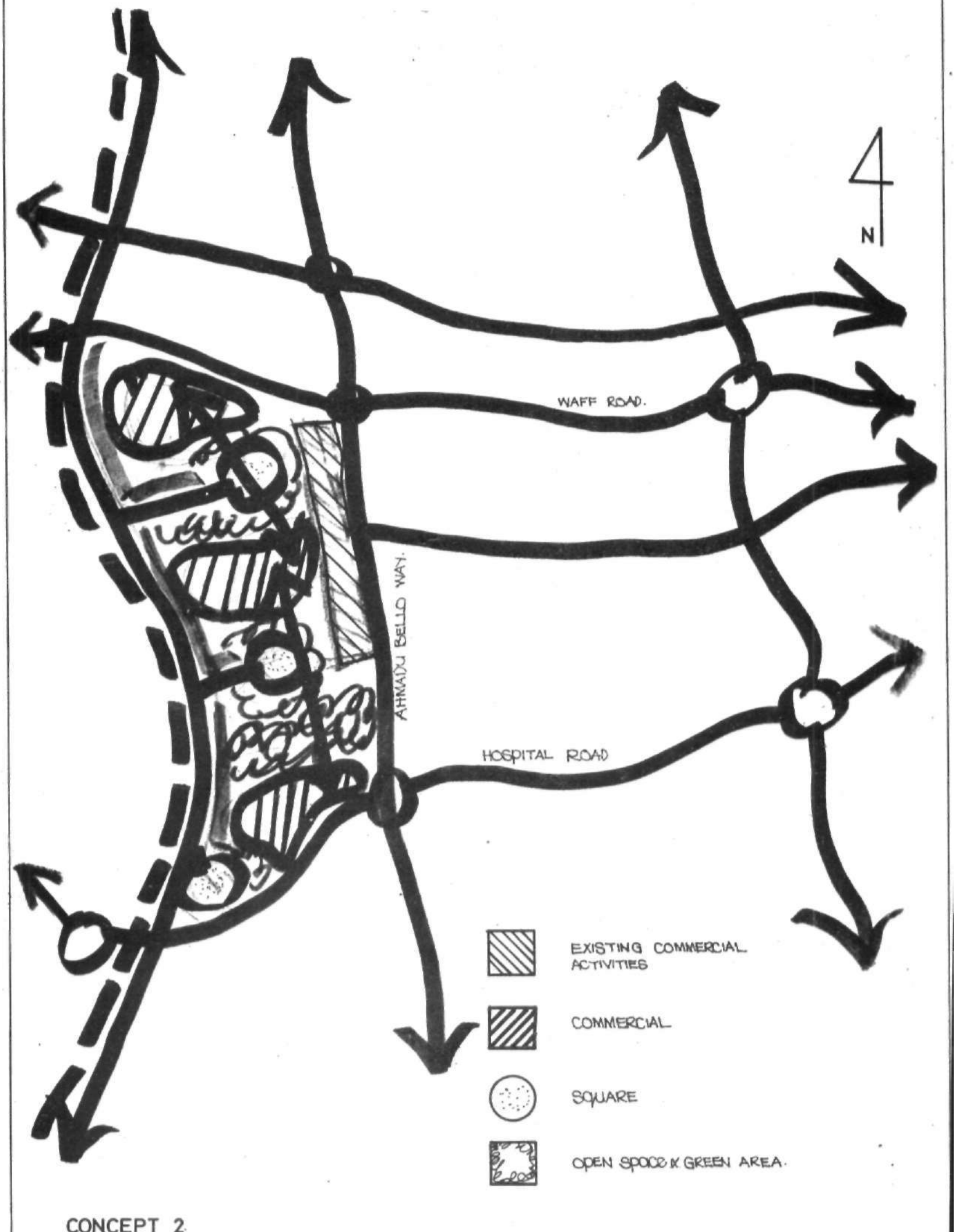
1. 1. The Site:

It is about 1.2 kilometers long and 400 metres wide. It is flat low lying strip of land with little relief change. The slope increases towards the northern part of the site. It covers an area of 58 hectares,

2. Roads: Provision of two regional E-W roads. One along Sokoto road across to Tudun Wada and Unguwan Malali. Second along Ibrahim Taiwo Road across Tudun Wada to Unguwan Rimi. Both roads connect to the western by-pass and eastern by-pass (proposed)(fig 3.09). Independence, Tafawa Balewa and Tudun Wada roads are to be upgraded to 2nd order roads Kanta, hospital, Constitution, etc, are to be upgraded 3rd order roads as shown in figure 3.09.


PEDESTRIAN BRIDGE
UNDER - PASS
PEDESTRIAN BRIDGE!
UNDER-PASS
PEDESTRIA BRIDGE!
UNDER - PASS
PEDESTRIAN BRIDGE!
UNDER-PASS
EXISTING COMMERCIAL ACTIVITIES
COMMERCIAL
OPEN SPACE & GREEN AREA.

CONCEPT 1

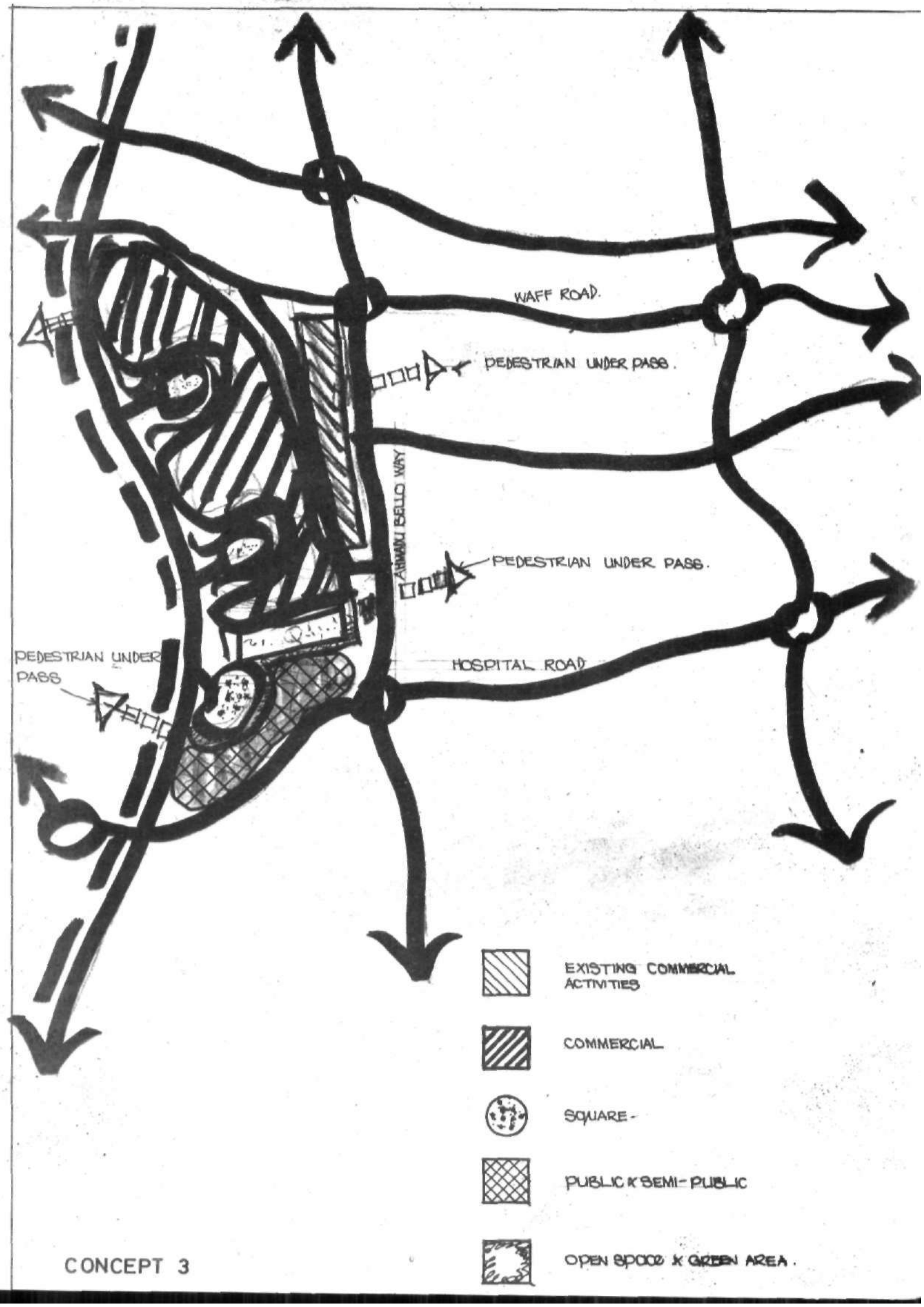

N
WAFF ROAD.
AHMADU BELLO WAY.
HOSPITAL ROAD
EXISTING COMMERCIAL ACTIVITIES
COMMERCIAL
SQUARE
OPEN SPACE & GREEN AREA.

CONCEPT 2

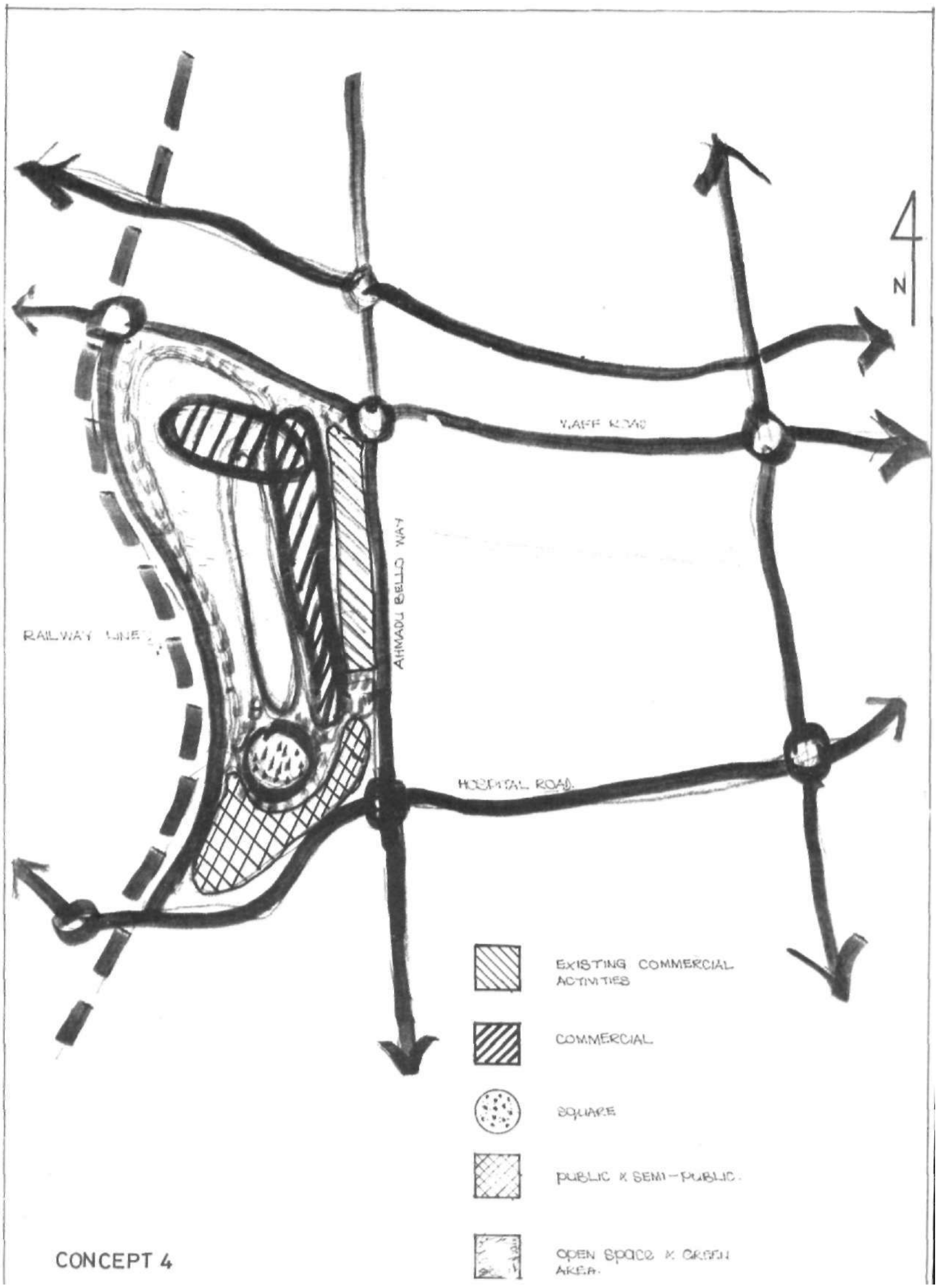
3. Open spaces/squares: Generous provision is made for open spaces and squares which occupies high percentage. This is desirable in view of the weather and result of traditional need for open spaces, civic square - the concept of a central open space is a well established element of traditional design (fig 1.01, 1.02 and 2.01) Instead of being connected to the Emir's palace here it is enclosed by the city hall and Mogadishu development authority with embassies and banks, museum, conference hall, etc.

4. The mini-market, light industries, etc: This area serves as an intruduction from the traditional existing market into the modern city centre. A transitional zone.

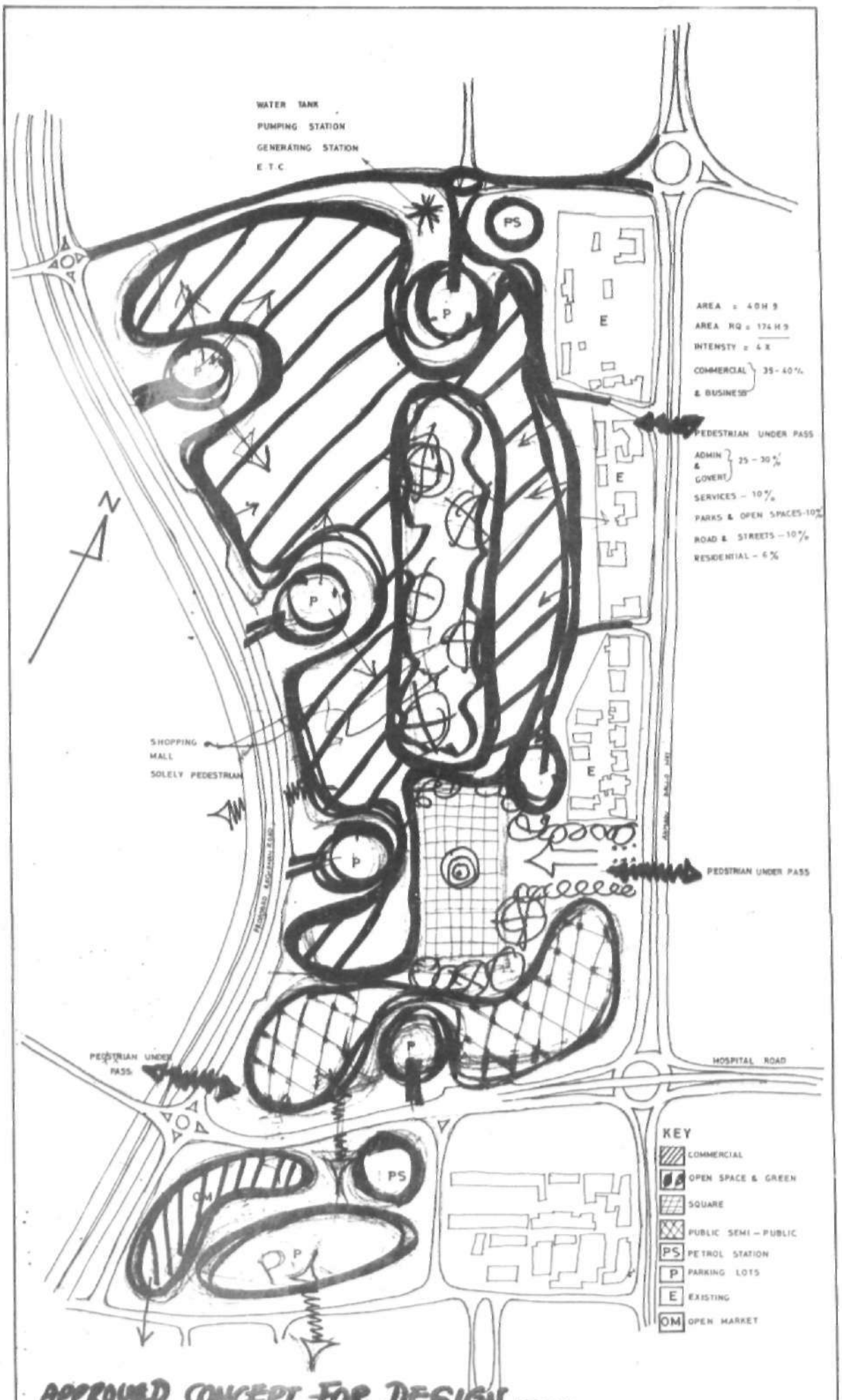
5. Religious buildings: Are placed at the ends to the western parts in view of the connection to the overall town and existing centre. Mosque in the south-western end relates to the market and freguency of usage. Church on the north-western part within residences relates to the surrounding uses.


WAFF ROAD.
PEDESTRIAN UNDER PASS.
PEDESTRIAN UNDER PASS.
PEDESTRIAN UNDER PASS
HOSPITAL ROAD
EXISTING COMMERCIAL ACTIVITIES
COMMERCIAL
SQUARE -
PUBLIC & SEMI-PUBLIC
OPEN SPACE & GREEN AREA.

CONCEPT 3


N
RAILWAY LINE
AHMADU BELLO WAY
HOSPITAL ROAD.
EXISTING COMMERCIAL ACTIVITIES
COMMERCIAL
SQUARE
PUBLIC & SEMI-PUBLIC.
OPEN SPACE & GREEN AREA.

CONCEPT 4



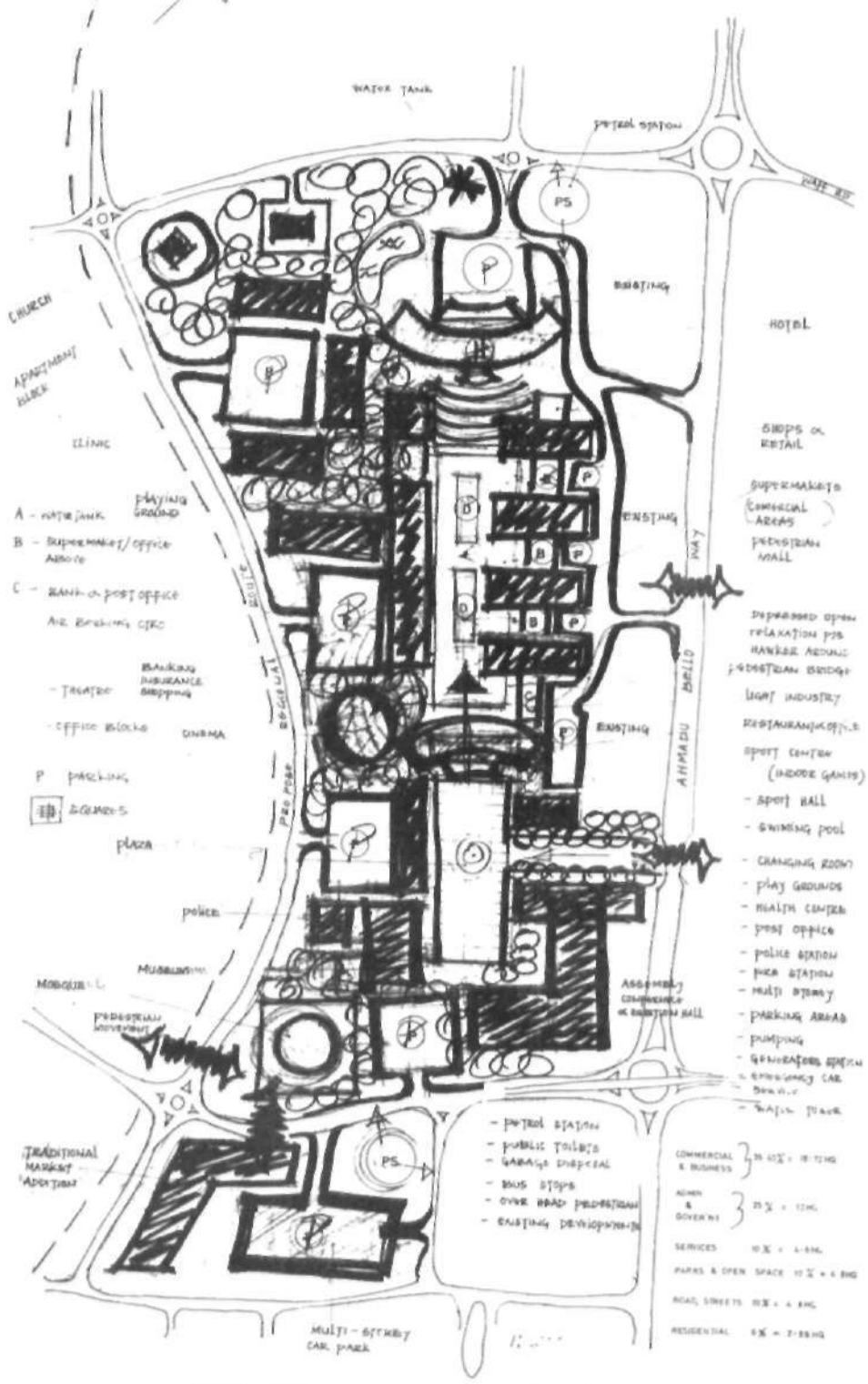
APPROVED CONCEPT FOR DESIGN 1:2500

6. Circulation: Circulation system for the centre is to keep vehicluar traffic out of the shopping centre so as to keep safe and create a comfortable pedestrian movement. Servicing and delivery access is provided to all major activitity points. Department stores, administrative centres, Banks, shops, etc are provided with adequate parking spaces.

7. Commercial and business area: The centreal core of the centre is devoted to this with the buildings on the ground 1st and 2nd floors all connected together so as to give a continous shopping effect and free flowing movement with the central part all filled with open spaces and landscaped with fountains, play-grounds, etc. It makes and interesting "shopping fun". From the south this open green and shopping terminates in the north with open-air theatre.

Restaurants and Cinema are located near the civic square in order to provide some vitality to the centre even after office hours when all buildings around the centre would have closed.

DETAILED SKETCH PROPOSAL
TO APPROVED CONCEPT



- SHOPPING AREAS
- WHOLE SALE & WARE HOUSES
- RETAIL & SERVICE SHOPS
- HAWKERS STAND / MAIN MARKET
- LIGHT INDUSTRY CENTRE
- SUPERMARKET / DEPARTMENT STORE
- BANKING / INSURANCE & COOP SPACES
- RESTAURANT & CAFETERIA
- INTERNATIONAL HOTEL
- SHOW ROOM & AIR LINES BOOKING OFFS.
- BLOCKS OF FAMILY FLATS
- BLOCKS OF SINGLE FAMILY FLATS

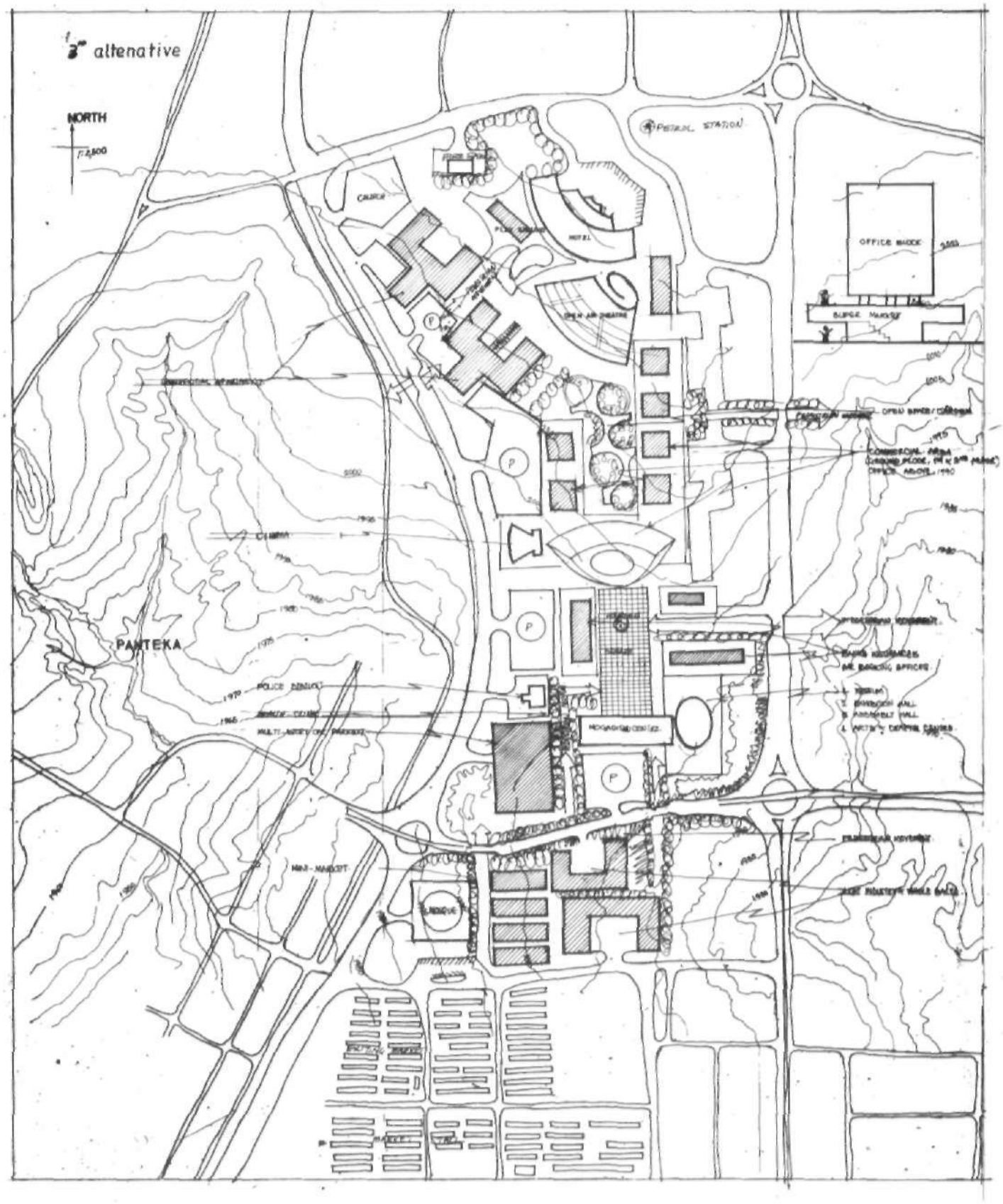
- CITY HALL
- MAGAJIRAU ADMIN CENTRE
- CIVIC SQ — PLAZA
- FOUNTAIN
- ASSEMBLY HALL
- CONFERENCE CENTRE
- EXHIBITION HALL
- MILITARY & NATURAL HISTORY MUSEUMS
- AMUSEMENT COMPLEX
- AMPHI THEATRE
- CINEMA - MULTI THEATRE
- ARTS & CRAFTS CENTRES
- OFFICE BLOCKS

8. Services: Public services which are essential important elements of the city centre because they need to be located where they are easily accessible to everybody. The police the fire station, post agencies, etc. are all services that are required in a modern city centre.

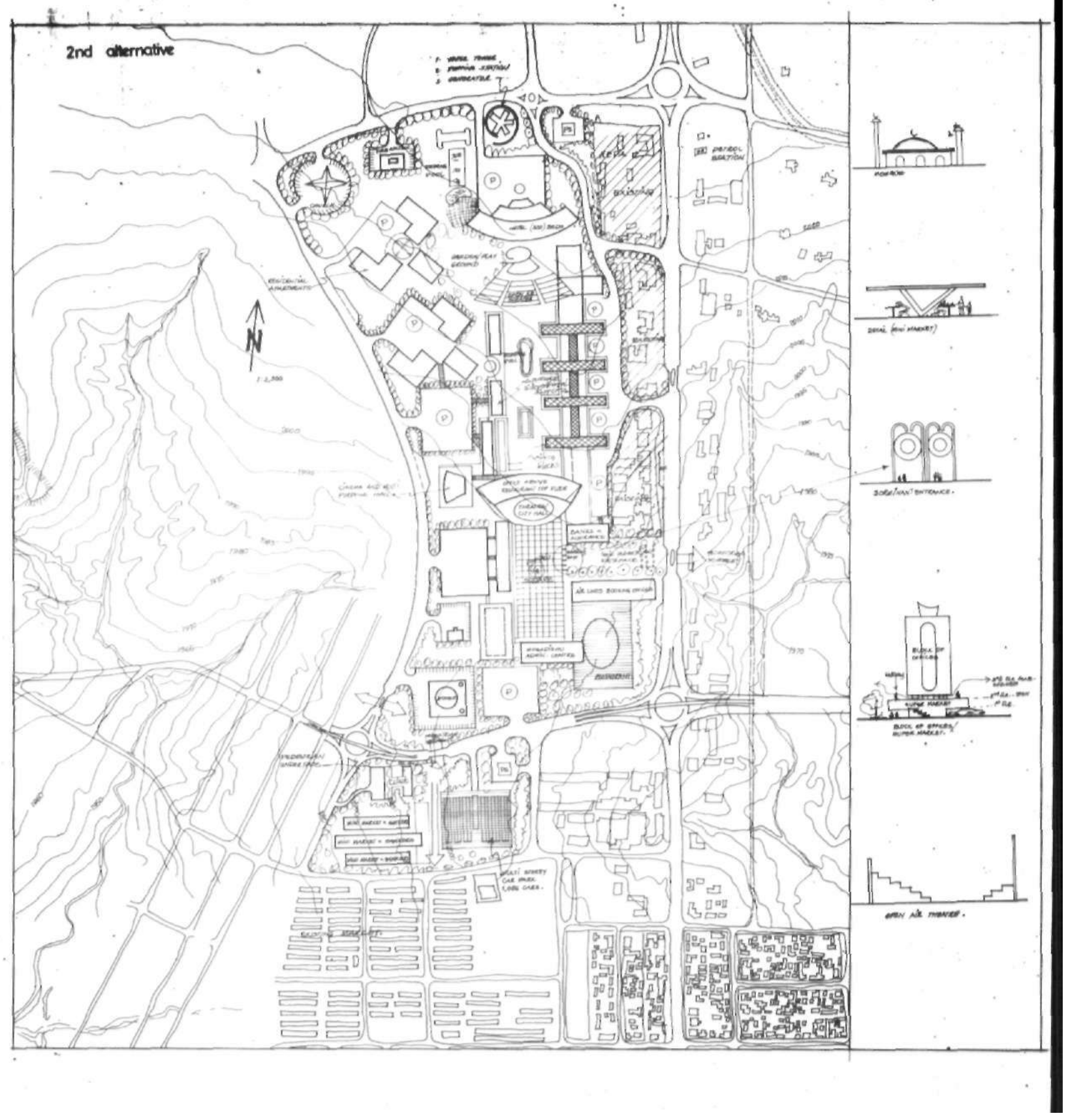
9. The International Hotel: Is well located to take advantage of the views of the open space, square, open air theatre, and the city centre as a whole.

10. Residences within the city centre: It is now generally accepted that residential units form important components of the city centre. A centre which does not plan for residential area that could accommodate a sizeable amount of people will be a highly fluctuating centre where it is full of like and bustle with activity during the day and goes dead at night. The ensuring that some apartment blocks are residential mainly from 3rd floors above will keep the centre lively all the time.

11. Museum, traditional arts and craft centre: Museum provided is for military and contemporary arts as that of natural history is already existing. Art and craft centre is incorporated within the museum to make it more functional and easily accessible.

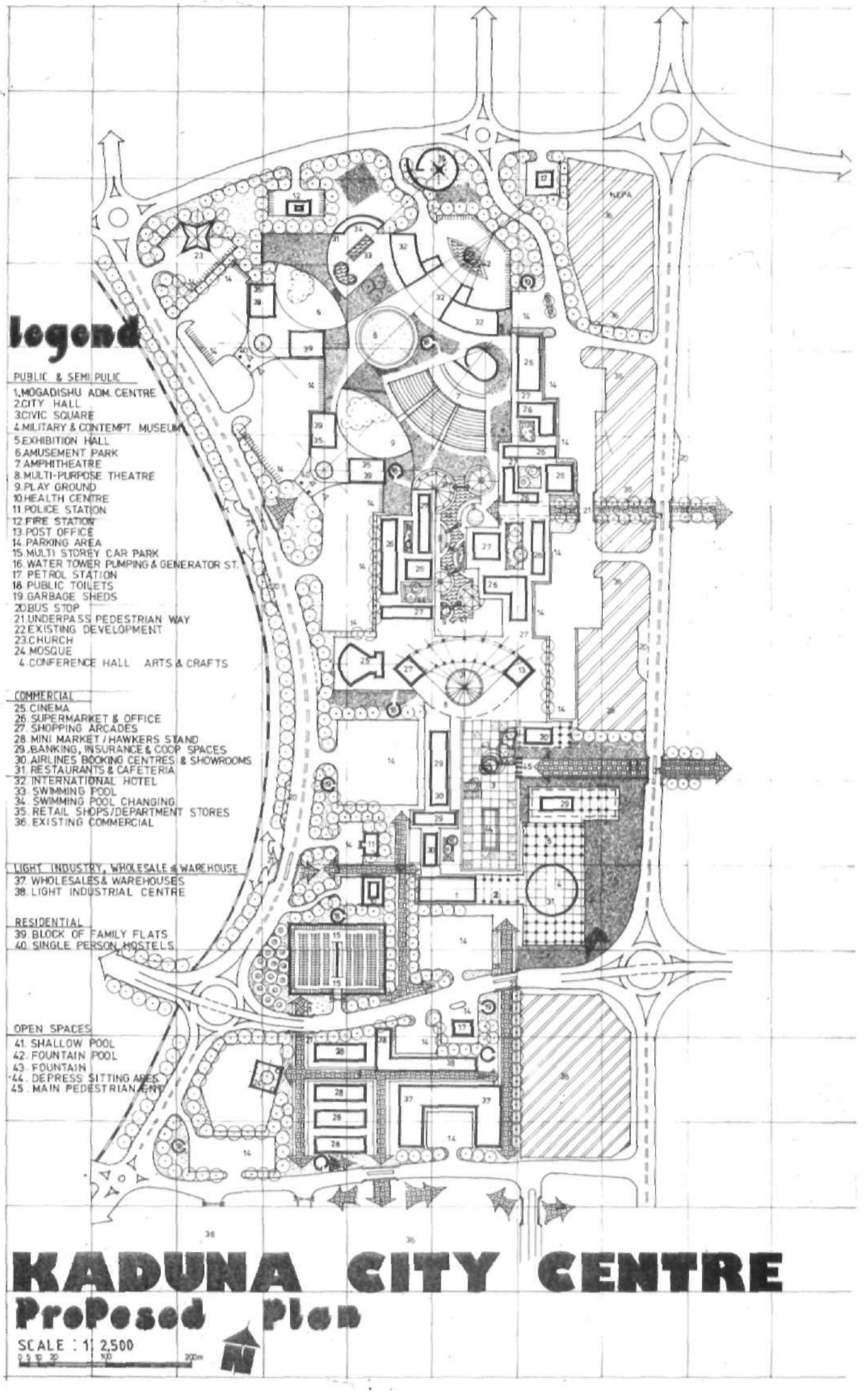

'B' altenative
NORTH
PETROL STATION
OFFICE BLOCK
HOTEL
OPEN AIR THEATRE
CHURCH
PANTEKA
POLICE BARRACKS
MULTI-PURPOSE HALL
MAIN MARKET
ADMINISTRATION
BARRACKS
ART GALLERY
CONFERENCE HALL
ASSEMBLY HALL

2nd alternative



12. Pedestrian ways: Pedestrian movements have been clearfully designed into the city centre taking the whole town into consideration. Underpasses are provided at points where the pedestrian movement is highest (fig 3.23). Tree planting along these routes provide shade.

4.60 Proposed services and utilities system:
The major power and pipelines and sewages collection systems will be buriedinto the ground.Electrical and telephone cables will not be allowed exposed along poles - they will be buried into the grdound for beautification of city centre. see drawings for the proposed services and utilities,



legend

PUBLIC & SEMI PULIC
1. MOGADISHU ADM. CENTRE
2. CITY HALL
3. CIVIC SQUARE
4. MILITARY & CONTEMPT. MUSEUM
5. EXHIBITION HALL
6. AMUSEMENT PARK
7. AMPHITHEATRE
8. MULTI-PURPOSE THEATRE
9. PLAY GROUND
10. HEALTH CENTRE
11. POLICE STATION
12. FIRE STATION
13. POST OFFICE
14. PARKING AREA
15. MULTI STOREY CAR PARK
16. WATER TOWER PUMPING & GENERATOR ST.
17. PETROL STATION
18. PUBLIC TOILETS
19. GARBAGE SHEDS
20. BUS STOP
21. UNDERPASS PEDESTRIAN WAY
22. EXISTING DEVELOPMENT
23. CHURCH
24. MOSQUE
4. CONFERENCE HALL ARTS & CRAFTS

COMMERCIAL
25. CINEMA
26. SUPERMARKET & OFFICE
27. SHOPPING ARCADES
28. MINI MARKET / HAWKERS STAND
29. BANKING, INSURANCE & COOP SPACES
30. AIRLINES BOOKING CENTRES & SHOWROOMS
31. RESTAURANTS & CAFETERIA
32. INTERNATIONAL HOTEL
33. SWIMMING POOL
34. SWIMMING POOL CHANGING
35. RETAIL SHOPS/DEPARTMENT STORES
36. EXISTING COMMERCIAL

LIGHT INDUSTRY, WHOLESALE & WAREHOUSE
37. WHOLESALES & WAREHOUSES
38. LIGHT INDUSTRIAL CENTRE

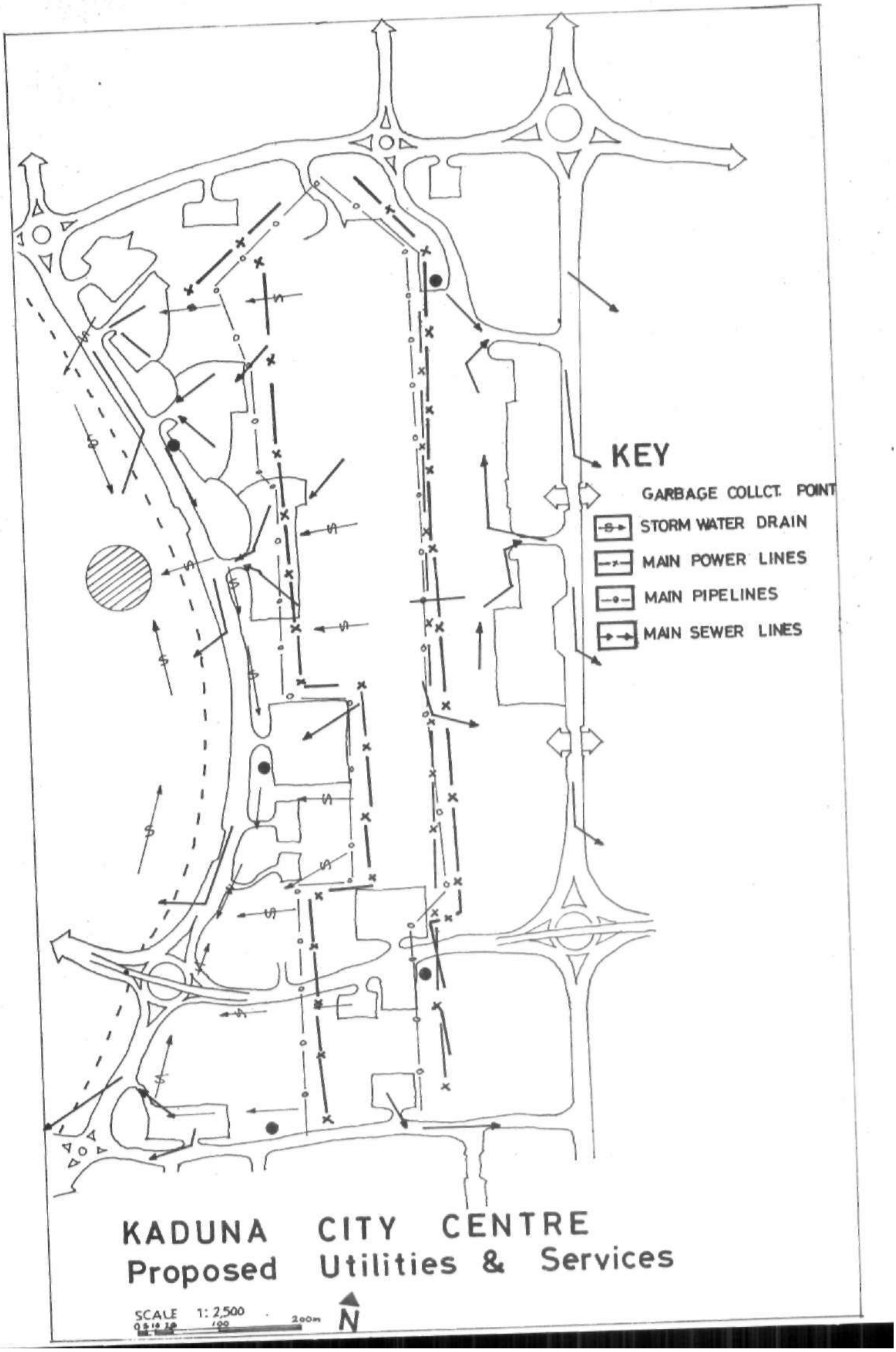
RESIDENTIAL
39. BLOCK OF FAMILY FLATS
40. SINGLE PERSON HOSTELS

OPEN SPACES
41. SHALLOW POOL
42. FOUNTAIN POOL
43. FOUNTAIN
44. DEPRESS SITTING AREA
45. MAIN PEDESTRIAN ENT.

KADUNA CITY CENTRE
ProPosed Plan

SCALE : 1: 2,500
0 5 10 20 50 100 200m

N


KEY
GARBAGE COLLCT. POINT
STORM WATER DRAIN
MAIN POWER LINES
MAIN PIPELINES
MAIN SEWER LINES
KADUNA CITY CENTRE
Proposed Utilities & Services
SCALE 1: 2,500
0 & 10 50 100 200m
N



KADUNA CITY CENTRE
proposed circulation system

0 5 10 20 100 Scale 1:2500

CHAPTER 5

5:00 Policies for Implementation
5:10 Introduction
5:20 Management (implementation Authority)
5:30 Financing programme
5:40 Phasing programme
5:50 Conclusion
5:60 Bibiography

5:10 Introduction:

The policy makers' immediate concern is that of how finance will be got, management and fundamental consideration of implementation. For this reason this chapter will deal with the implementation processes.

1. Land Acquisition

Already in Kaduna the site for city centre has been acquired at Mogadishu area. This used to be the Mogadishu Barracks. It covers an area of 48 hectares. Site yet to be acquired is the present N.B.C. Site. This site can be acquired after the legal acceptance of this project by using the public land acquisition framed under legal action as compulsory public land acquisition ordinance 1917.

(i) Declaration of the area as planning area and framing of the planning scheme.

(ii) Establishment of development control regulations and

(iii) Payment of adequate compensation to those injuriously affected either by:

(a) monetary compensation

(b) service site

(c) Rehousing of the displace.

In the rehousing of the displaced at a location of considerable distance from their places of work efficient public transportation service should be provided to convey them .

Public enlightment is also necessary at this state to get the public aware of the scheme.

5.20 Management (Implementation Authority)

To avoid the previous mistakes, the government as a first step should create a development authority solely for implementing this project. An authority to be named.

MOGADISHU DEVELOPMENT AUTHORITY (MDA)

could be formed. This means that the hands of the Ministry should be off the implementation. The powers of the board should briefly be:

(i) Powers to develop Mogadishu Site.

(ii) " " produce designs.

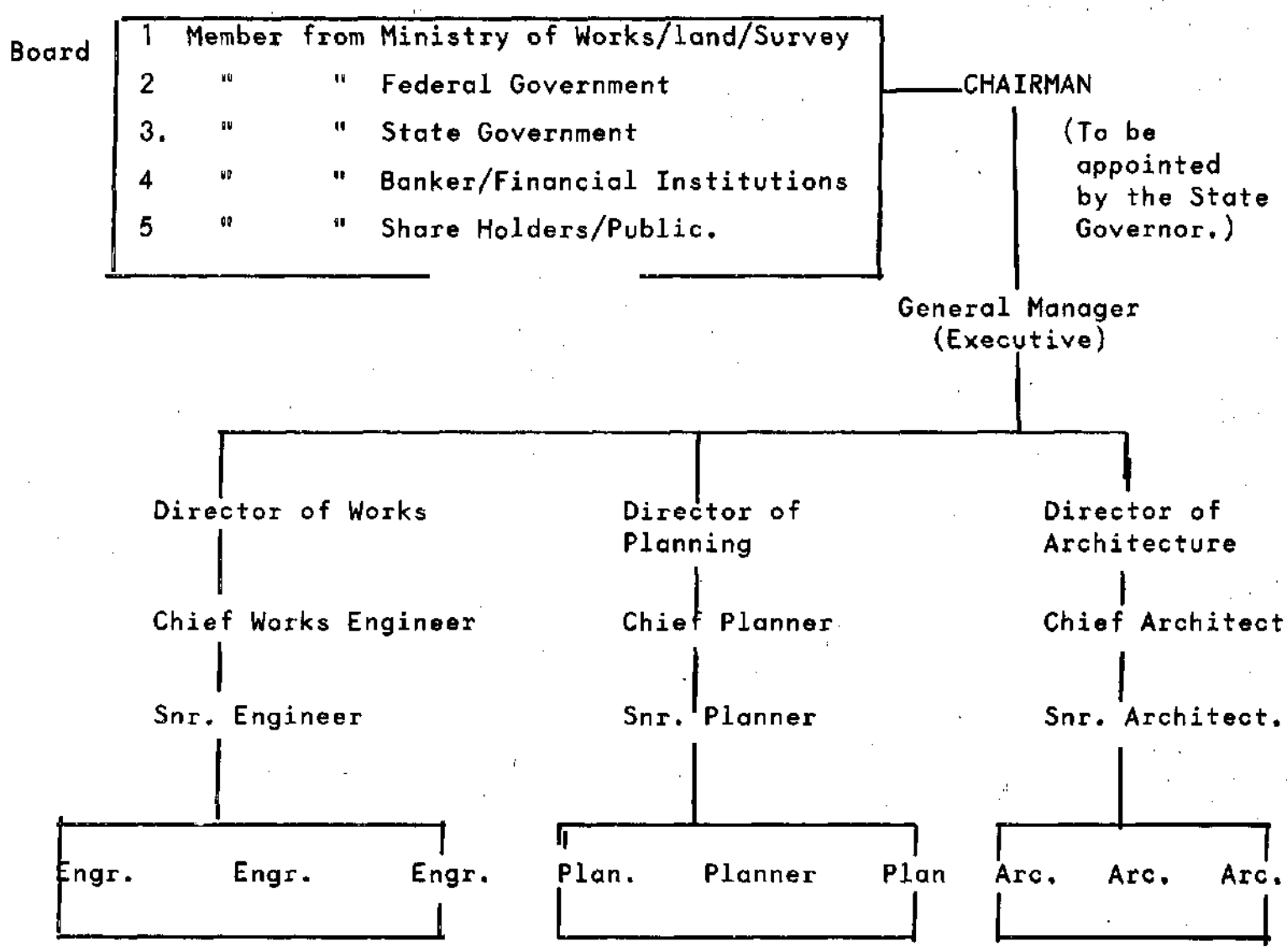
(iii) " " award and supervise construction.

(iv) " " rent-out buildings or any such property under their authority.

(v) Powers to collect revenue and re-invest where necessary as could be decided by the management board.

The board should constitute of the following members: (a) Chairman, (1); (b) board members - one to be appointed by the governor; one from the state ministry of works, land and survey; another member from the

bankers (or financial institutions); one from the Federal Government; and one from share holders or public/Quasi-government institutions. Three directors for works, planning and architecture should be incharged with the implementation and execution. One general management who will possess an executive power of the development should see to the day to day running of the whole scheme. He will be responsible to the chairman and subsequently the board. He is preferably to be an architect/ Planner by profession.



Structural Designs to approved building plans & supervision of executed buildings projects

Co-ordination and implementation of approved city centre design plan.

Produce architectural designs and suppervision of projects.

Execution of road projects, drainage, refuse collection and disposal and general maintenance.

MANAGEMENT STRUCTURE

5.30 Financing Programme

Sources of finances should come from the following bodies.

(a) Federal government
(b) State government
(c) Shares to Quasi-Government Institutions and Banks
(d) Development loan from public & guaranteed by government.
(e) Revolving fund to be managed by the MDA.

5:40 Phasing Programme:

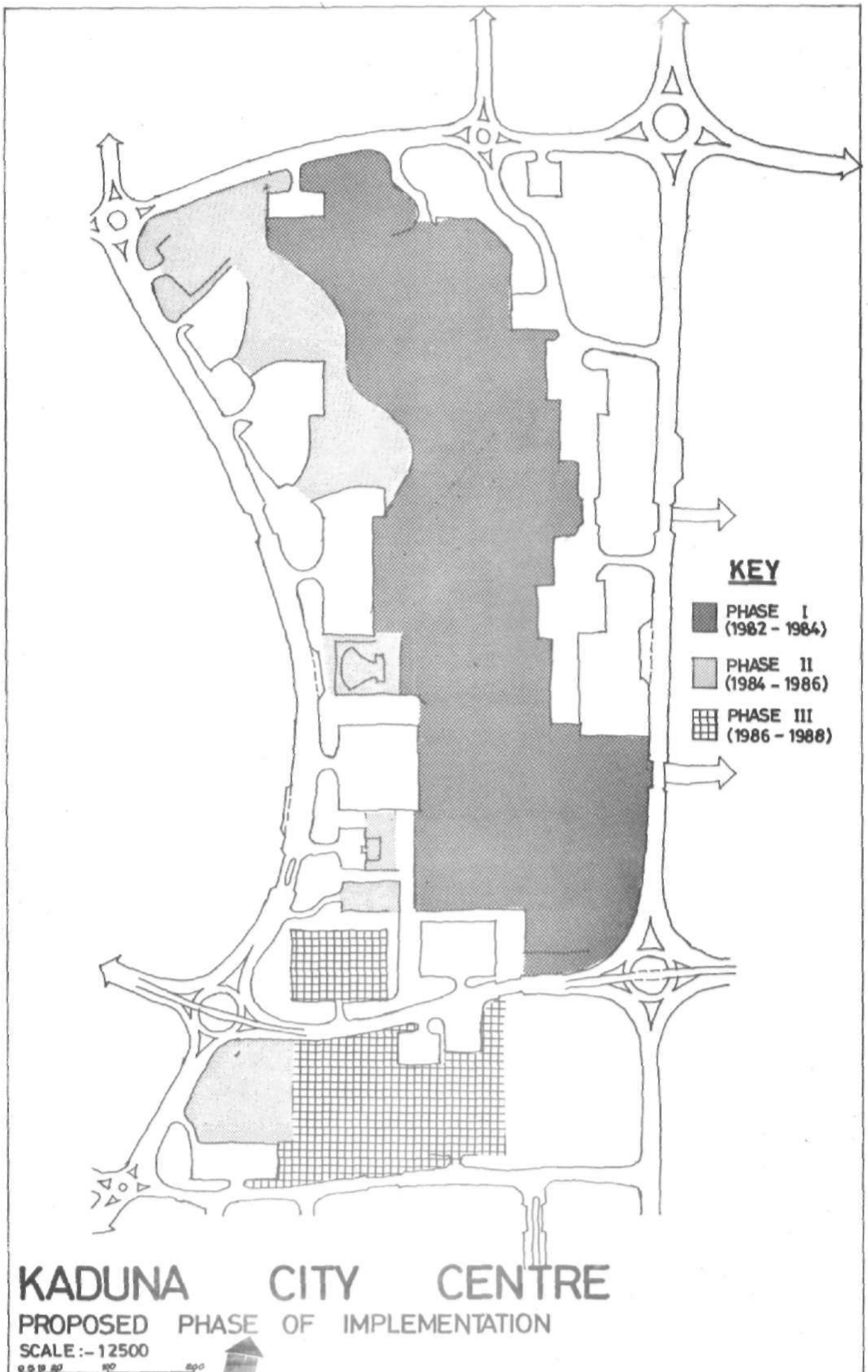
The phasing is so designed such that when the city centre is eventually built it will all look like one single entity.

Phase I:

This involves the central part of the city centre and the commercial areas. Starting from central to northern part of the centre (1982-1984) A.D.

Facilities within phase I:

(i) Commercial buildings.
(ii) Offices
(iii) Supermarkets
(iv) Hotel and swimming pools
(v) Open air theatre and garden
(vi) Two-East-West regional routes
(vii) Mogadishu Centre and Museum, Arts Centre and Conference Halls.
(viii) Banks, insurance, air booking centres.
(ix) Roads, parking and delivery points
(x) Public utilities and services (public toilets, phones, post boxes, etc.)


KEY
PHASE I
(1982 - 1984)
PHASE II
(1984 - 1986)
PHASE III
(1986 - 1988)
KADUNA CITY CENTRE
PROPOSED PHASE OF IMPLEMENTATION
SCALE :- 12500

(xi) Pedestrian Ways
(xii) refuse collectiona and duisposal system.
(xiii) petrol station, police sitation and fire station.
(xiv) Water tank, generating power, etc.

Phase II:

Involves the residential developments on the western partof site and the central part of administration and public functions (1984-1986) A.D.
Facilities within phase II:

(i) Residential flats.
(ii) Mosque and Church
(iii) Cinema
(iv) Commercial buildings and office and restaurant.
(v) Health Clinic/Centre
(vi) Roads, parking and delivery points.
(vii) Petrol station
(vẍii) Pedestrian ways and refuse colelection, and disposal system.

Phase III: Involves the industrial, mini-market wholesale and retail within the souther part of the site connecting the old existing market and new city centre (1986-1988) A.D.

Facilities within Phase III:

(i) Mini-market and hawkers stand.

(ii) Wholesale and retail

(iii) Multi-storey car park

)iv) Petrol Station.

(v) Pedestrian ways.

(vi) Offices, shops and restaurant.

(vii) light industrial

(viii) Services and facilities.

(ix) Refuse collection and disposal.

C O N C L U S I O N:

City centres are the most delicate part of the town as such their designs needs all the attention it deserves. Traditional city centre's study revealed that the concept of open spaces, squares, dorminant spatial buildings are part and parcel of the centre. These elements could be seen designed into the proposed city centre. According to the functional requirements, dorminant buildings of such form as high-rise offices, large supermarkets, etc. are deliberately designed round the square and open spaces to achieve this traditional nature. The idea of having prominent and imposing entrance gate which relates to the traditional gates is also encorporated.

Study of traffic and landuses determine the proposed traffic routes and landuses. Two east-west regional routes that are proposed to ease the traffic congestion dong Ahmadu Bello Way and market areas. Landuse study showed high increase in office spaces, this determine the large number of multi-storey offices. Supermarkets/departmental stores, retail shops, etc. are to be housed in the ground floor, 1st floor and 2nd floors. On all the 2nd floors to the commercial buildings there is a continuous connection

of walkways and open spaces so that movement from one building to another can also be achieved on top. All the buildings are connected.

Open spaces with playground and relaxation areas are used to interconnect the whole city centre and make it interesting and full of fun. Uses are distributed according to their most functional relationship with the entire town. Thus, the mini-market, light industries, wholesales, etc. serve as transition zone between traditional market and modern centre. Pedestrian crossings are considered dangerous points for most city centres. To remove this danger the pedestrian crossings are carefully studied and designed at points where there are maximum pedestrian movement. Pedestrian underpass is preferred to overhead bridge for its city centre was conceived as a pedestrian precinct, the pedestrian movement from outside is properly integrated within.

For successful implementation there is the need for co-ordination with other professionals like the architects, engineers, surveyors, etc.

STATION 3d FRIDAY 23/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	345(345)	1 (2)	1 (3)	100 (75)	29 (9.57)	-	435
7-8am	610(610)	3 (6)	7 (21)	192 (144)	3 (0.99)	-	782
8-9am	532(532)	7 (14)	3 (9)	137 (102.75)	17 (5.61)	-	663
9-10am	433 (433)	2 (4)	12 (36)	150 (112.5)	48 (5.84)	32(32)	633
10-11am	525(525)	3 (6)	15 (45)	187 (140.25)	36 (11.88)	-	728
11-12N	510(510)	1 (2)	12 (36)	170 (127.5)	20 (6.6)	-	682
12-1pm	645(645)	1 (2)	20 (60)	205 (153.75)	13 (4.29)	-	865
-2pm	555(555)	1 (2)	10 (30)	313 (234.75)	10 (3.3)	-	825
2-3pm	555 (555)	1 (2)	10 (30)	186 (138.75)	13 (4.29)	-	730
3-4pm	615 (615)	1 (2)	10 (30)	170 (127.5)	18 (5.94)	-	780
4-5pm	617 (617)	1 (2)	10 (30)	210 (157.5)	15 (4.95)	-	812
5-6pm	330 (330)	-	5 (15)	105 (78.75)	8 (2.64)	-	426

STATION 2f FRIDAY - 23/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-)PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	493	14 (28)	7 (21)	178 (133.5)	101 (33.33)	-	709
7-8am	1883	20 (40)	21 (63)	664 (498)	68 (22.44)	-	2,506
8-9am	1683	18 (36)	12 (36)	424 (318)	21 (6.93)	-	2,080
9-10am	1536	19 (38)	9 (27)	386 (289.5)	22 (7.26)	-	1.900
10-11am	1090	5 (10)	23 (69)	254 (190.5)	22 (7.26)	-	1,367
11-12N	1050	13 (26)	27 (81)	290 (217.5)	14 (4.62)	-	1.379
12-1pm	788	16 (32)	9 (27)	231 (173.25)	11 (3.63)	-	1,024
1-2pm	703	13 (26)	9 (27)	194 (145.5)	15 (4.95)	-	907
[illegible]	1062	22 (44)	15 (45)	344 (258)	34 (11.22)	-	1,420
[illegible]	[illegible]	7 (14)	12 (36)	413 (309.75)	22 (7.26)	-	2,462
4-5pm	1548	18 (36)	15 (45)	309 (231.75)	23 (7.59)	-	1,868
5-6pm	1354	16 (32)	9 (27)	235 (176.25)	26 (8.58)	-	1,598

STATION 4g FRIDAY - 23/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	TRAILERS (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (P-CU)
6-7am	342	14 (28)	2 (6)	141 (105.75)	14 (4.62)	-	495
7-8am	125	9 (18(	4 (12)	41 (30.75)	11 (3.63)	-	189
8-9am	385	13 (26)	5 (15)	126 (94.5)	14 (4.62)	-	525
9-10am	580	8 (16)	9 (27)	275 (206.25)	56 (18.48)	-	848
10-11am	550	1 (2)	6 (18)	261 (195.75)	42 (13.86)	-	780
11-12N	441	-	12 (36)	204 (153)	30 (9.9)	-	640
12-1pm	335	1 (2)	7 (21)	142 (106.5)	13 (4.29)	-	469
1-2pm	575	1 (2)	9 (27)	173 (129.75)	35 (11.55)	-	745
2-3pm	505	-	2 (6)	140 (105)	14 (4.62)	-	621
3-4pm	458	-	4 (12)	163 (122.25)	22 (7.26)	-	600
4-5pm	494	4 (8)	3 (9)	163 (122.25)	16 (5.28)	-	639
5-6pm	455	2 (4)	4 (12)	193 (144.75)	19 (6.27)	-	622

STATION 3c FRIDAY - 23/4/82

(In-bound)

TIME	CARS/TAXI/ MINI BUS/ LIGHT VAN (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES/ TRAILER (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	107(107)	1 (2)	3 (9)	36 (27)	11 (3.63)	-	148
7-8am	226(226)	3 (6)	1 (3)	80 (60)	18 (5.94)	-	301
8-9am	311(311)	3 (6)	15 (45)	104 (78)	29 (9.57)	-	450
9-10am	440 (440)	6 (12)	10 (30)	145(108.75)	36 (11.88)	-	603
10-11am	326 (326)	3 (6)	1 (3)	97 (72.75)	17 (5.61)	-	413
11-12N	266 (266)	1 (2)	6 (18)	72 (54)	29 (9.27)	-	350
12-1pm	305 (305)	1 (2)	4 (12)	259(194.25)	28 (9.24)	-	523
1-2pm	345(345)	1 (2)	10 (30)	210(157.5)	36 (11.88)	-	546
2-3pm	292 (292)	-	5 (15)	154(115.5)	21 (6.93)	-	429
3-4pm	290(290)	3 (6)	4 (12)	105 (78.75)	17 (5.61)	-	392
4-5pm	297 (297)	1 (2)	3 (9)	135 (101.25)	22 (7.26)	-	417
5-6pm	138 (138)	2 (4)	3 (9)	53 (39.75)	6 (1.98)	-	193

STATION 4b FRIDAY - /3/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRUCKS/TRACTORS (2-PCU)	TRAILERS (3-PCU)	MOTOR CYCLES (.75 PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	150	2 (4)	6 (18)	7 (5.25)	15 (4.95)	-	190
7-8am	512	1 (2)	4 (12)	77 (57.75)	7 (2.31)	-	616
8-9am	560	2 (4)	8 (24)	94 (70.5)	12 (3.96)	-	693
9-10am	710	1 (2)	8 (24)	168 (126.25)	20 (6.6)	-	909
10-11am	625	2 (4)	10 (30)	255 (191.25)	41 (13.53)	-	864
11-12N	560		8 (24)	140 (105.25)	23 (7.59)	-	735
12-1pm	391	1 (2)	4 (12)	161 (120.75)	21 (6.93)	-	533
1-2pm	565	-	16 (48)	616 (462)	36 (11.88)	-	1,087
2-3pm	485	-	8 (24)	200 (150)	21 (6.93)	-	666
3-4pm	359	-	6 (18)	198 (148.5)	22 (7.26)	-	533
4-5pm	414	-	6 (18)	146 (109.5)	13 (4.29)	-	546
5-6pm	375	7 (14)	2 (6)	130 (97.5)	13 (4.29)	-	497

STATION 3d SATURDAY - 24/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	100	-	-	33 (24.75)	5 (1.65)	-	126
7-8am	442	-	5 (15)	92 (69)	15 (4.95)	-	531
8-9am	353	1 (2)	10 (30)	85 (63.75)	10 (3.3)	-	452
9-10am	151	-	6 (18)	143(107.25)	11 (3.63)	-	280
10-11am	425	1 (1)	10 (30)	62 (46.5)	8 (2.64)	-	506
11-12N	520	-	6 (18)	140 (105)	13 (4.29)	1 (1)	647
12-1pm	820	-	21 (63)	212 (159)	19 (6.27)	-	1,048
1-2pm	630	-	65 (195)	75 (56.25)	9 (2.97)	-	884
2-3pm	735	-	7 (21)	204 (153)	25 (8.25)	-	917
[illegible]	[illegible]	1 (2)	3 (9)	96 (77)	11 (3.63)	-	637
4-5pm	540	-	5 (15)	138 (103.5)	19 (6.27)	-	665
5-6pm	970	-	11 (33)	272 (204.0)	40 (13.2)	-	1,220

STATION 3c SATURDAY-24/4/82

(In-bound)

TIME	CARS/TAXI/ MINI BUS/ LIGHT VAN (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES/ TRAILERS (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	70 (70)	-	-	40 (30)	8 (2.64)	-	103
7-8am	215(215)	8 (16)	-	-	-	-	231
8-9am	292 (292)	1 (2)	8 (24)	123 (92.25)	17 (5.61)	-	416
9-10am	334 (334)	2 (4)	4 (12)	120 (90)	22 (7.26)	-	447
10-11am	360 (360)	-	8 (24)	137 (102.75)	22 (7.26)	-	494
11-12N	384 (384)	-	27 (81)	98 (73.5)	19 (6.27)	1(1)	546
12-1pm	735 (735)	1 (2)	57 (171)	149 (111.75)	31 (10.23)	35 (35)	1,065
1-2pm	289 (289)	-	3 (9)	138 (103.5)	10 (3.3)	-	405
2-3pm	275 (275)	1 (2)	5 (15)	138 (103.5)	10 (3.3)	-	370
3-4pm	278 (278)	-	1 (3)	101 (75.75)	8 (2.64)	-	359
4-5pm	237 (237)	1 (2)	4 (12)	105 (78.75)	22 (7.26)	-	337
5-6pm	235 (235)	1 (2)	-	85 (63.75)	22 (7.26)	-	308

STATION 4g SATURDAY - 24/4/82

(Out.-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	TRAILERS (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	122	-	3 (9)	47 (35.25)	3 (.99)	-	167
7-8am	285	6 (12)	2 (6)	82 (61.50)	14 (4.62)	-	369
8-9am	338	24 (48)	1 (3)	141 (105.75)	22 (7.26)	-	502
9-10am	450	6 (12)	3 (9)	31 (23.25)	11 (3.63)	-	499
10-11am	407	1 (2)	3 (9)	122 (91.5)	12 (3.96)	-	514
11-12N	527	2 (4)	3 (9)	126 (94.5)	17 (5.61)	-	640
12-1pm	405	1 (2)	1 (3)	135 (101.25)	17 (5.61)	-	517
1-2pm	360	1 (2)	1 (3)	108 (81)	11 (3.63)	-	450
2-3pm	385	-	1 (3)	110 (82.5)	16 (5.28)	-	476
3-4pm	375	1 (2)	4 (12)	89 (66.75)	7 (2.31)	-	458
4-5pm	363	1 (2)	-	179 (134.25)	14 (4.62	-	504
5-6pm	345	5 (10)	3 (9)	109 (81.75)	10 (3.3)	-	449

STATION 2e SATURDAY - 24/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTA (PCU
6-7am	715	1 (2)	24 (72)	81 (60.75)	20 (6.6)	-	85
7-8am	1510	23 (46)	49 (147)	248 (186)	39 (12.87)	-	1,90
8-9am	1800	46 (92)	46 (138)	467 (350.25)	22 (7.26)	-	2,38
9-10am	1800	8 (16)	41 (123)	452 (339)	22 (7.26)	-	2,28
10-11am	1800	2 (4)	32 (96)	547 (410.25)	25 (8.25)	-	2,31
11-12N	1440	2 (4)	28 (84)	454 (340.5)	5 (1.65)	-	1,87
12-1pm	1345	- -	33 (99)	350 (262.5)	11 (3.63)	-	1,71
1-2pm	1740	- -	34 (102)	497 (372.75)	32 (10.56)	-	2,22
2-3pm	1343	2 (4)	38 (114)	384 (288)	14 (4.62)	-	1,75
3-4pm	1440	3 (6)	30 (90)	365 (273.73)	13 (4.29)	-	1,81
4-5pm	1690	4 (8)	17 (51)	482 (361.5)	22 (7.26)	-	2.11
5-6pm	1430	25 (50)	24 (72)	409 (306.75)	29 (9.57)	-	1,86

STATION 4b SATURDAY - 24/3/82

(In-bound)

TIME	CARS/TAXI (1.PCU)	TRUCKS/TRACTORS (2-PCU)	TRAILERS (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	NO FIGURE RECORDED						
7-8am	83	2 (4)	3 (9)	14 (10.5)	4 (1.32)	-	108
8-9am	367	2 (4)	6 (18)	109 (81.75)	6 (1.98)	-	473
9-10am	388	2 (4)	8 (24)	122 (91.5)	12 (3.96)	-	512
10-11am	154	1 (2)	2 (6)	120 (90)	12 (3.96)	-	255
11-12N	395	3 (6)	3 (9)	102 (76.5)	16 (5.28)	-	492
12-1pm	344	-	1 (3)	109 (81.75)	17 (5.61)	-	434
1-2pm	275	1 (2)	3 (9)	88 (66)	10 (3.3)	-	355
2-3pm	250	1 (2)	6 (18)	74 (55.5)	14 (4.62)	-	330
3-4pm	220	4 (8)	4 (12)	61 (45.75)	11 (3.63)	-	289
4-5pm	257	2 (4)	-	113 (84.75)	12 (3.96)	-	350
5-6pm	255	6 (12)	1 (2)	92 (69)	8 (2.64)	-	342

STATION 2f SATURDAY - 24/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	451	12 (24)	8 (24)	136 (102)	42 (13.86)	-	615
7-8am	1050	8 (16)	8 (24)	198 (148.5)	29 (9.57)	-	1,248
8-9am	1025	24 (48)	5 (15)	231 (173.25)	23 (7.59)	-	1.269
9-10am	1030	23 (46)	3 (9)	256 (192)	19 (6.27)	-	1,283
10-11am	1400	7 (14)	12 (36)	275 (206.25)	13 (4.29)	-	1.661
11-12N	1525	10 (20)	14 (42)	231 (173.25)	16 (5.28)	-	1,766
12-1pm	1105	12 (24)	13 (39)	230 (172.5)	15 (4.95)	-	1,346
1-2pm	825	18 (36)	16 (48)	225 (168.75)	14 (4.62)	-	1,082
2-3pm	725	6 (12)	15 (45)	194 (145.5)	14 (4.62)	-	932
3-4pm	815	5 (10)	16 (48)	193 (144.75)	8 (2.64)	-	1,020
4-5pm	1551	5 (10)	23 (69)	391 (293.25)	20 (6.6)	-	1,930
5-6pm	960	1 (2)	19 (57)	288 (216)	15 (4.95)	-	1,240

STATION 4g MONDAY - 26/4/82

(Not-formed)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	TRAILERS/ LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	139	-	-	37 (27.75)	22 (7.26)	-	174
7-8am	614	8 (16)	3 (9)	208 (203.5)	50 (16.5)	-	879
8-9am	580	19 (38)	7 (21)	208 (154.5)	32 (10.56)	-	804
9-10am	650	6 (12)	8 (24)	269 (184.25)	39 (12.87)	-	884
10-11am	430	-	9 (27)	227 (170.25)	30 (8.9)	-	637
11-12N	425	1 (2)	7 (21)	181 (135.75)	21 (6.93)	-	591
12-1pm	564	-	4 (12)	208 (201)	23 (7.59)	-	785
1-2pm	524	-	4 (12)	190 (142.5)	24 (7.92)	-	686
2-3pm	625	-	3 (9)	225 (168.75)	37 (12.21)	-	815
3-4pm	525	-	8 (24)	150 (112.5)	14 (4.62)	-	666
4-5pm	475	3 (6)	2 (6)	160 (120)	14 (4.62)	-	612
5-6pm	525	4 (8)	12 (36)	221 (165.75)	52 (17.16)	-	752

STATION 2e MONDAY - 26/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	700	9 (18)	33 (99)	127 (95.25)	31 (10.23)	-	922
7-8am	1800	24 (48)	49 (147)	468 (351)	45 (14.85)	-	2,361
8-9am	1915	54 (108)	48 (144)	502 (376.5)	44 (14.52)	-	2,558
9-10am	2045	7 (14)	50 (150)	549 (411.75)	21 (6.93)	-	2,628
10-11am	1800	5 (10)	38 (114)	638 (478.5)	11 (3.63)	-	2,406
11-12N	1440	2 (4)	39 (117)	473 (354.75)	26 (8.58)	-	1,924
12-1pm	1800	4 (8)	38 (114)	540 (405)	31 (10.23)	-	2,337
1-2pm	1440	-	36 (108)	428 (321)	27 (8.91)	-	1,878
2-3pm	1800	2 (4)	58 (174)	501 (375.75)	38 (12.54)	-	2,366
3-4pm	2160	1 (2)	52 (156)	698 (523.5)	54 (17.82)	-	2,859
4-5pm	1382	18 (36)	37 (111)	413 (309.75)	31 (10.23)	-	1,849
5-6pm	1350	42 (84)	29 (87)	419 (314.25)	27 (8.91)	-	1,844

STATION 4b MONDAY - 26/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	68	1 (2)	1 (3)	20 (15)	3 (.99)	-	109
7-8am	417	2 (4)	6 (18)	107 (80.25)	13 (4.29)	-	524
8-9am	595	2 (4)	5 (15)	155 (116.25)	18 (5.94)	-	736
9-10am	600	1 (2)	5 (15)	201 (150.75)	27 (8.91)	-	777
10-11am	673	-	8 (24)	276 (207)	33 (10.89)	-	915
11-12N	504	-	5 (15)	199 (149.25)	16 (5.28)	-	674
12-1pm	720	-	17 (51)	278 (208.5)	24 (7.92)	-	987
1-2pm	540	2 (4)	6 (18)	203 (152.25)	16 (5.28)	-	720
2-3pm	553	-	8 (24)	217 (162.75)	28 (9.24)	-	749
3-4pm	598	-	-	263 (197.25)	44 (14.52)	-	802
4-5pm	479	6 (12)	4 (12)	182 (136.5)	16 (5.2)	-	645
5-6pm	352	7 (14)	3 (9)	124 (93)	9 (2.97)	-	471

STATION 3d MONDAY - 26/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	200	-	2 (6)	72 (54)	10 (3.3)	-	263
7-8am	615	-	3 (9)	203 (152.25)	28 (9.24)	-	786
8-9am	400	3 (6)	11 (33)	17 (109.5)	17 (5.61)	-	554
9-10am	410	-	15 (45)	134 (100.5)	6 (1.98)	-	558
10-11am	360	2 (4)	10 (30)	134 (100.5)	19 (6.27)	-	501
11-12N	280	5 (10)	9 (27)	113 (84.75)	17 (5.61)	-	407
12-1pm	417	-	8 (24)	215 (161.25)	19 (6.27)	-	609
1-2pm	315	1 (2)	10 (30)	128 (96.00)	21 (6.93)	-	450
2-3pm	552	-	14 (42)	171 (128.25)	14 (4.62)	-	727
3-4pm	579	6 (12)	8 (24)	144 (108.0)	22 (7.26)	-	730
4-5pm	375	-	5 (15)	113 (84.75)	13 (4.29)	-	479
5-6pm	375	-	4 (12)	134 (100.5)	8 (2.64)	-	490

STATION 2f MONDAY - 26/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	460	8 (16)	10 (30)	125 (93.75)	60 (19.8)	-	620
7-8am	1275	4 (8)	16 (48)	373 (279.75)	71 (23.43)	-	1,634
8-9am	900	4 (8)	15 (45)	214 (160.5)	22 (7.26)	-	1.121
9-10am	1075	16 (32	25 (75)	272 (204)	31 (10.23)	-	1,396
10-11am	1405	9 (18)	12 (36)	316 (237)	12 (3.96)	-	1,700
11-12N	760	13 (26)	23 (69)	207 (155.25)	14 (4.62)	-	1.015
12-1pm	825	7 (14)	31 (93)	231 (173.25)	21 (6.93)	-	1,112
1-2pm	850	13 (26)	15 (45)	195 (146.25)	19 (6.27)	-	1.074
2-3pm	825	13 (26)	18 (57)	231 (173.25)	18 (6.27)	-	1.088
[illegible]	900	6 (12)	23 (69)	201 (150.75)	22 (7.26)	-	1.139
4-5pm	850	4 (8)	18 (54)	131 (98.25)	15 (4.95)	-	1.015
5-6pm	955	5 (10)	24 (72)	212 (159)	18 (5.94)	-	1,202

STATION 3c MONDAY - 26/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTA (PCU
6-7am	55(55)	-	1 (3)	26(19.5)	8 (2.64)	-	80
7-8am	205(205)	1 (2)	6 (18)	61(45.75)	22 (7.26)	-	278
8-9am	261(261)	2 (4)	10 (30)	97 (72.75)	29 (9.57)	-	377
9-10am	383 (383)	2 (4)	11 (33)	155(116.25)	36 (11.88)	-	548
10-11am	225 (225)	5 (10)	5 (15)	118(88.5)	15 (4.95)	-	344
11-12N	255 (255)	1 (2)	8 (24)	130(97.5)	36(11.88)	-	390
12-1pm	268 (268)	-	6 (18)	76 (57)	12 (3.96)	-	347
1-2pm	229 (229)	1 (2)	7 (21)	101(75.75)	18 (6.27)	35 (35)	369
2-3pm	263 (263)	3 (6)	3 (9)	119(89.25)	37 (12.21)	-	380
3-4pm	287 (287)	1 (2)	10 (30)	151 (113.25)	39 (12.87)	-	445
4-5pm.	240 (240)	-	8(24)	109 (81.75)	27 (8.91)	-	355
5-6pm	270 (270)	2 (4)	4 (12)	110 (82.5)	27 (8.91)	-	377

STATION 5j TUESDAY - 27/4/82

(Out-bound)

TIME	CAR/TAXI (1-PCU)	TRACTORS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLE (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	-	-	-	1 (0.76)	2 (0.66)	-	1
7-8am	5	-	[illegible]	[illegible]	10 (3.3)	-	16
8-9am	13	-	2 (6)	16 (12)	2 (0.66)	-	32
9-10am	12	-	3 (9)	19 (14.25)	6 (1.98)	-	37
10-11am	10	-	1 (3)	10 (7.5)	11 (3.63)	-	24
11-12N	15	-	1 (3)	31 (23.25)	8 (2.64)	-	44
12-1pm	13	-	[illegible]	[illegible]	12 (3.96)	-	53
1-2pm	6	-	3 (9)	13 (9.75)	9 (2.97)	-	28
2-3pm	7	-	[illegible]	16 (12)	12 (3.96)	-	26
3-4pm	8	-	[illegible]	15 (11.25)	9 (2.97)	-	25
4-5pm	10	-	-	20 (15)	9 (2.97)	-	28
5-6pm	5	-	1 (3)	12 (9)	12 (3.96)	-	21

STATION 5i TUESDAY - 27/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	1	-	6 (18)	1 (0.75)	1 (0.33)	-	20
7-8am	6	-	1 (3)	3 (2.25)	1 (0.33)	-	12
8-9am	9	-	4 (12)	8 (6)	8 (2.64)	-	30
9-10am	8	-	-	13 (9.75)	10 (3.3)	-	21
10-11am	4	-	-	17 (12.75)	8 (2.64)	17	36.39
11-12N	15	-	-	10 (14.25)	5 (1.65)	-	31
12-1pm	15	-	1 (3)	26 (19.5)	5 (1.65)	-	39
1-2pm	3	-			5 (1.65)	-	8
2-3pm	6	-	3 (9)	12 (9)	13 (4.29)	-	28
3-4pm	7		1 (3)	14 (10.5)	7 (2.31)	-	23
4-5pm	3	-	-	14 (10.5)	10 (3.3)	-	17
5-6pm	-	-	-	6 (4.5)	7 (2.31)	-	7

STATION 3c TUESDAY - 27/4/82

(In-bound)

TIME	CARS/TAXI/ MINI BUS/ LIGHT VAN (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES/ TRAILERS (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL PCU
6-7am	68 (68)	-	-	28 (21)	8 (2.64)	-	92
7-8	172 (172)	1 (2)	1 (3)	55 (41.25)	17 (5.61)	-	224
8-9am	265 (265)	-	7 (21)	97 (72.75)	7 (2.31)	-	361
9-10am	205 ((205)	3 (6)	3 (9)	60 (45)	28 (9.24)	-	274
10-11am	285 (285)	3 (6)	8 (24)	143(107.25)	15 (4.95)	-	427
11-12N	260 (260)	2 (4)	1 (3)	125 (93.75)	16 (5.28)	-	366
12-1pm	385 (385)	1 (2)	6 (18)	153 (114.75)	7 (2.31)	-	522
1-2pm	235 (235)	-	5 (15)	100 (75)	19 (6.27)	-	331
2-3pm	300 (300)	-	3 (9)	147 (110.25)	50 (16.5)	-	436
3-4pm	336 (336)	2 (4)	7 (21)	165(123.75)	33 (10.89)	-	496
4-5pm	260 (260)	1 (2)	4 (12)	125 (93.75)	45 (14.85)	-	383
5-6pm	255 (255)	1 (2)	4 (12)	110 (82.5)	15 (4.95)	-	357

STATION 2e TUESDAY - 27/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	705	-	31 (93)	148 (111)	39 (12.87)	-	922
7-8am	1800	19 (38)	36 (108)	551 (413.25)	48 (15.84)	-	2.375
8-9am	2110	47 (94)	50 (150)	324 (243)	42 (13.86)	-	2,611
9-10am	2127	7 (14)	38 (114)	552 (414)	19 (6.27)	-	2,675
10-11am	1985	4 (8)	34 (102)	616 (462)	24 (7.92)	-	2,565
11-12N	1800	2 (4)	36 (108)	571 (428.25)	23 (7.59)	-	2,349
12-1pm	2080	6 (12)	50 (150)	606 (454.5)	41 (13.53)	-	2,710
1-2pm	1900	2 (4)	30 (90)	569 (426.75)	27 (8.91)	-	2,430
2-3pm	2000	3 (6)	42 (126)	449 (336.75)	45 (14.85)	-	2,484
3-4pm	1980	2 (4)	52 (156)	575 (431.25)	35 (11.55)	-	2,583
4-5pm	1900	9 (18)	35 (105)	461 (345.75)	46 (15.18)	-	2,384
5-6pm	1645	20 (40)	27 (81)	428 (321)	33 (10.89)	-	2,099

STATION 4g TUESDAY - 27/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	TRAILERS/ LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	160	1 (2)	3 (9)	65 (48.75)	17 (5.61)	-	225
7-8am	550	7 (14)	5 (15)	271 (203.25)	45 (14.85)	-	797
8-9am	650	21 (42)	16 (48)	260 (195)	36 (11.88)	-	947
9-10am	500	1 (2)	6 (18)	203 (152.25)	29 (9.57)	-	682
10-11am	650	1 (2)	7 (21)	248 (186)	30 (9.9)	-	869
11-12N	590	2 (4)	11 (33)	228 (171)	20 (6.6)	-	805
12-1pm	600	3 (6)	7 (21)	225 (169)	30 (9.9)	-	806
1-2pm	555	-	1 (3)	130 (97.5)	17 (5.61)	-	661
2-3pm	495	-	12 (36)	193 (145)	23 (7.59)	-	684
3-4pm	485	-	4 (12)	146 (109.5)	19 (6.27)	-	613
4-5pm	570	4 (8)	7 (28)	172 (129)	11 (3.63)	-	739
5-6pm	485	3 (6)	1 (3)	168 (126)	14 (4.62)	-	625

STATION 3d TUESDAY - 27/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	97	-	-	20 (15)	2 (.66)	-	113
7-8am	475	1(2)	2 (6)	176 (132)	23 (7.59)	-	623
8-9am	465	5 (10)	6 (18)	146 (109.5)	15 (4.95)	-	608
9-10am	460	1 (2)	9 (27)	160 (120)	19 (6.27)	-	615
10-11am	485	3 (6)	17 (51)	114 (85.5)	15 (4.95)	-	633
11-12N	580	-	3 (9)	182 (136.5)	11 (3.63)	-	729
12-1pm	718	5 (10)	38 (114)	245 (183.75)	31 (10.23)	-	1,036
1-2pm	618	5 (10)	42 (126)	184 (138)	77 (25.41)	-	917
[illegible]	760	7 (14)	19 (57)	124 (93)	39 (12.87)	-	937
[illegible]	670	[illegible]	6 (18)	193 (144.75)	21 (6.95)	-	865
4-5pm	561	3 (6)	7 (21)	146 (109.5)	15 (4.95)	1 (1)	703
5-6pm	625	1 (2)	12 (36)	216 (162)	26 (8.58)	-	834

STATION 4b TUESDAY 27/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.25-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	104	-	-	23 (5.75)		-	127
7-8am	394	-	4 (12)	76 (19)	8 (1.98)	-	465
8-9am	594	2 (4)	18 (54)	148 (37)	24 (7.92)	-	786
9-10am	593	-	7 (21)	220 (165)	28 (9.24)	-	788
10-11am	643	3 (6)	9 (27)	224 (56.25)	21 (6.93)	-	886
11-12N	610	3 (6)	6 (18)	324 (245)	27 (8.91)	-	889
12-1pm	619	2 (4)	12 (36)	230 (172.5)	29 (9.57)	-	847
1-2pm	628	-	16 (48)	227 (56.75)	12 (3.96)	-	883
2-3pm	515	-	4 (12)	240 (180.25)	50 (16.5)	-	699
3-4pm	478	-	3 (9)	259 (194.25)	30 (9.9)	-	688
4-5pm	545	-	5 (15)	188 (142.5)	29 (9.27)	-	712
5-6pm	350	9 (18)	1 (3)	127 (95.25)	12 (3.96)	-	470

STATION 2f TUESDAY - 27/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS/TRUCKS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	460	5 (10)	12 (36)	83 (62.25)	47 (15.51)	-	584
7-8am	1200	8 (16)	14 (42)	294 (220.5)	50 (16.5)	-	1,485
8-9am	1075	11 (22)	18 (54)	248 (186)	30 (9.9)	-	1,347
9-10am	925	19 (38)	8 (24)	214 (160.5)	29 (9.57)	-	1,157
10-11am	930	20 (40)	15 (45)	264 (198)	33 (10.89)	-	1.224
11.12N	775	22 (44)	19 (57)	186 (139.5)	22 (7.26)	-	1.023
12-1pm	900	14 (28)	12 (36)	225 (168.75)	26 (8.58)	-	1,141
1-2pm	925	11 (22)	20 (60)	222 (166.5)	18 (5.94)	-	1,179
2-3pm	1065	21 (42)	11 (33)	176 (132)	20 (6.6)	-	1,279
3-4pm	945	24 (48)	18 (54)	185 (138.75)	26 (8.58)	-	1,194
4-5pm	1000	23 (46)	24 (75)	224 (168)	24 (7.92)	-	1.297
5-6pm	1100	16 (32)	18 (54)	258 (192)	38 (12.54)	-	1.391

STATION 5i WEDNESDAY - 28/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	1	-	-	-	-	-	1
7-8am	2	-	2 (6)	6 (4.5)	3 (.99)	-	14
8-9am	10	-	5 (15)	12 (9)	12 (9)	-	43
9-10am	10	-	-	21 (15.75)	13 (9.75)	-	36
10-11am	7	-	5 (15)	10 (7.5)	5 (3.75)	-	33
11-12N	4	-	2 (10)	10 (7.5)	4 (3)	-	25
12-1pm	3	-	2 (10)	20 (15)	6 (4.5)	-	33
1-2pm	11	-	1 (3)	10 (7.5)	5 (3.75)	-	25
2-3pm	6	-	2 (6)	18 (13.5)	7 (5.25)	-	31
[illegible]	[illegible]	-	[illegible]	15 (11.25)	3 (2.25)	-	19
4-5pm	3	-	5 (15)	11 (8.25)	3 (2.25)	-	29
5-6pm	3	-	-	12 (9)	1 (0.33)	-	12

STATION 5j WEDNESDAY - 28/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS (2-PCU)	LARGE BUSES (3-PCU)	MEDIUM BUSES (.75-PCU)	CYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	3	-	12 (36)		4 (1.32)	-	40
7-8am	12	-	1 (3)	20 (15)	1 (.33)	-	32
8-9am	12	-	5 (15)	12 (9)	10 (3.3)	-	39
9-10am	5	-	1 (3)	4 (3.00)	11 (3.63)	-	25
10-11am	14	-	3 (9)	21 (15.75)	18 (5.94)	14	59
11-12N	6	-	-	20 (15)	10 (3.3)	-	24
12-1pm	11	-	1 (3)	20 (15.0)	15 (4.95)	-	39
1-2pm	10	-	2 (6)	23 (17.25)	3 (.99)	-	34
2-3pm	10	-	5 (15)	17 (12.75)	8 (2.64)	-	40
3-4pm	9	-	1 (3)	22 (16.5)	2 (0.66)	-	29
4-5pm	4	-	-	18 (13.5)	4 (1.32)	-	19
5-6pm	4	-	1 (3)	15 (11.25)	3 (0.99)	-	19

STATION 51 THURSDAY - 29/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	1	-	2 (6)	-	-	-	7
7-8am	5	-	2 (6)	[illegible]	5 (1.65)	-	19
8-9am	11	-	4 (12)	14 (10.5)	3 (0.99)	-	35
9-10am	6	-	4 (12)	[illegible]	8 (2.64)	-	25
10-11am	365	-	4 (12)	[illegible]	12 (4.95)	-	416
11-12N	155	-	5 (15)	[illegible]	7 (2.31)	29	217
12-1pm	80	-	5 (15)	[illegible]	10 (3.3)	-	121
1-2pm	65	-	-	36 (26.25)	-	32	123
2-3pm	16	-	1 (3)	18 (13.5)	8 (2.64)	-	35
3-4pm	10	-	2 (6)	[illegible]	5 (1.65)	-	30
4-5pm	17	-	1 (3)	12 (9)	5 (1.65)	-	31
5-6pm	10	-	1 (3)	7 (5.25)	5 (1.65)	-	20

STATION 5j THURSDAY [illegible]

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS (2-PCU)	LAND [illegible] (3-PCU)	[illegible] (1.5-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	2	-	4 (12)		3 (0.99)	18	33
7-8am	13	-	3 (9)	26 (15)	16 (5.28)	-	42
8-9am	9	-	3 (9)	17 (12.75)	8 (2.64)	-	33
9-10am	8	-	2 (6)	10 (7.5)	3 (0.99)	-	23
10-11am	27	-	3 (9)	20 (15)	6 (1.98)	14	67
11-12N	9	-	2 (6)	13 (9.75)	9 (2.97)	3	31
12-1pm	15	-	-	11 (8.25)	19 (6.27)	-	30
1-2pm	28	-	-	31 (23.25)	5 (1.65)	-	53
2-3pm	24	-	1 (3)	28 (21)	16 (5.28)	-	53
3-4pm	15	-	-	18 (13.5)	8 (2.64)	-	31
4-5pm	20	-	1 (3)	28 (21)	9 (2.64)	-	47
5-6pm	10	-	2 (6)	10 (7.5)	-	-	24

STATION 5j FRIDAY - 30/4/82

(Out-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS (2-PCU)	LARGE BUSES (3-PCU)	MOTOR CYCLE (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	-	-	-	-	-	-	0
7-8am	4	-	3 (9)	1 (0.75)	-	-	14
8-9am	-	-	-	-	-	-	0
9-10am	2	-	4 (12)	1 (0.75)	-	-	15
10-11am	12	-	6 (18)	3 (2.25)	8 (2.64)	-	35
11-12N	11	-	8 (24)	7 (5.25)	-	-	40
12-1pm	5	-	1 (3)	6 (4.5)	5 (1.65)	39	53
1-2pm	10	-	6 (18)	4 (3)	1 (0.33)	-	31
2-3pm	5	-	5 (15)	2 (1.5)	1 (0.33)	-	22
3-4pm	11	-	6 (18)	2 (1.5)	8 (2.64)	-	33
4-5pm	15	-	2 (6)	7 (5.25)	7 (2.31)	8	37
5-6pm	11	-	-	10 (7.5)	17 (5.61)	21	45

SATION 5i FRIDAY - 30/4/82

(In-bound)

TIME	CARS/TAXI (1-PCU)	TRACTORS (2-PCU)	LARGE BUSES (2-PCU)	MOTOR CYCLES (.75-PCU)	BICYCLES (.33-PCU)	ANIMALS (1-PCU)	TOTAL (PCU)
6-7am	-	-	-	-	-	-	0
7-8am	1	-	-	-	-	-	1
8-9am	1	-	-	1 (0.75)	-	-	2
9-10am	2	-	-	-	-	-	2
10-11am	4	-	2 (6)	3 (2.25)	-	-	12
11-12N	11	-	3 (9)	10 (7.5)	1	-	29
12-1pm	5	-	1 (3)	4 (3)	-	-	11
1-2pm	3	-	4 (12)	8 (6)	-	-	21
2-3pm	3	-	3 (9)	1 (0.75)	-	-	13
3-4pm	4	-	2 (6)	3 (2.25)	6	-	18
4-5pm	8	-	3 (9)	7 (5.25)	2	-	23
5-6pm	8	-	1 (3)	11 (8.25)	11	-	19

STATION (1) FRIDAY - 23/4/82

TIME	TOTAL P.C.U.
6-7am	1288
7-8am	2949
8-9am	3737
9-10am	*4070
10-11am	2653
11-12N	3009
12-1pm	3266
1-2pm	2599
2-3pm	2945
3-4pm	*3503
4-5pm	3472
5-6pm	2886

STATION (1) SATURDAY - 24/4/82

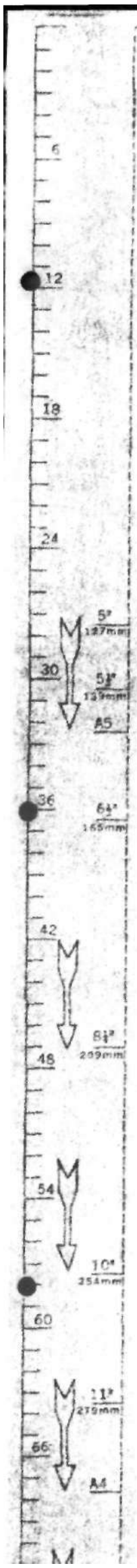
TIME	TOTAL P.C.U.
6-7am	909
7-8am	2263
8-9am	2462
9-10am	*3620
10-11am	1627
11-12N	1863
12-1pm	2487
1-2pm	1752
2-3pm	*3644
3-4pm	2711
4-5pm	2552
5-6pm	2852

STATION (1) FRIDAY - 23/4/82

TIME	TOTAL P.C.U.
6-7am	1288
7-8am	2949
8-9am	3737
9-10am	*4070
10-11am	2653
11-12N	3009
12-1pm	3266
1-2pm	2599
2-3pm	2945
3-4pm	*3503
4-5pm	3472
5-6pm	2886

STATION (1) SATURDAY - 24/4/82

TIME	TOTAL P.C.U.
6-7am	909
7-8am	2263
8-9am	2462
9-10am	*3620
10-11am	1627
11-12N	1863
12-1pm	2487
1-2pm	1752
2-3pm	*3644
3-4pm	2711
4-5pm	2552
5-6pm	2852



STATION (1) MONDAY - 26/4/82

TIME	TOTAL P.C.U.
6-7am	1178
7-8am	*3457
8-9am	2955
9-10am	3344
10-11am	2304
11-12N	2697
12-1pm	3077
1-2pm	3285
2-3pm	3009
3-4pm	*3495
4-5pm	2224
5-6pm	2143

STATION (1) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
6-7am	1027
7-8am	2484
8-9am	3310
9-10am	*3549
10-11am	2573
11-12N	1756
12-1pm	*3462
1-2pm	2870
2-3pm	2218
3-4pm	2693
4-5pm	3113
5-6pm	2720

STATION (1) MONDAY - 26/4/82

TIME	TOTAL P.C.U.
6-7am	1178
7-8am	*3457
8-9am	2955
9-10am	3344
10-11am	2304
11-12N	2697
12-1pm	3077
1-2pm	3285
2-3pm	3009
3-4pm	*3495
4-5pm	2224
5-6pm	2143

STATION (1) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
6-7am	1027
7-8am	2484
8-9am	3310
9-10am	*3549
10-11am	2573
11-12N	1756
12-1pm	*3462
1-2pm	2870
2-3pm	2218
3-4pm	2693
4-5pm	3113
5-6pm	2720

STATION (4) MONDAY - 26/4/82

TIME	TOTAL P.C.U.
6-7am	283
7-8am	1403
8-9am	1540
9-10am	*1661
10-11am	1552
11-12N	1265
12-1pm	*1772
1-2pm	1406
2-3pm	1564
3-4pm	1468
4-5pm	1257
5-6pm	1223

STATION (4) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
6-7am	352
7-8am	1262
8-9am	1733
9-10am	1470
10-11am	*1755
11-12N	1694
12-1pm	*1653
1-2pm	1544
2-3pm	1383
3-4pm	1301
4-5pm	1451
5-6pm	1095

STATION (4) FRIDAY - 23/4/82

TIME	TOTAL P.C.U.
6-7am	676
7-8am	805
8-9am	1218
9-10am	*1757
10-11am	1644
11-12N	1375
12-1pm	1002
1-2pm	*1832
2-3pm	1287
3-4pm	1133
4-5pm	1185
5-6pm	1110

STATION (4) SATURDAY - 24/4/82

TIME	TOTAL P.C.U.
6-7am	167
7-8am	477
8-9am	975
9-10am	1011
10-11am	769
11-12N	*1132
12-1pm	*951
1-2pm	805
2-3pm	806
3-4pm	747
4-5pm	853
5-6pm	791

STATION (2) MONDAY - 26/4/82

TIME	TOTAL P.C.U.
6-7am	1543
7-8am	3885
8-9am	3679
9-10am	4024
10-11am	*4106
11-12N	2939
12-1pm	3449
1-2pm	2952
2-3pm	3454
3-4pm	*3998
4-5pm	2864
5-6pm	3046

STATION (2) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
6-7am	1506
7-8am	3870
8-9am	*3970
9-10am	3832
10-11am	3789
11-12N	3372
12-1pm	*3851
1-2pm	3609
2-3pm	3763
3-4pm	3777
4-5pm	3681
5-6pm	3490

STATION (5) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
6-7am	21
7-8am	28
8-9am	62
9-10am	58
10-11am	60
11-12N	*75
12-1pm	*92
1-2pm	36
2-3pm	54
3-4pm	48
4-5pm	45
5-6pm	28

STATION (5) WEDNESDAY - 28/4/82

TIME	TOTAL P.C.U.
6-7am	41
7-8am	46
8-9am	82
9-10am	61
10-11am	*92
11-12N	43
12-1pm	*72
1-2pm	59
2-3pm	71
3-4pm	46
4-5pm	48
5-6pm	31

STATION (5) THURSDAY - 29/4/82

TIME	TOTAL P.C.U.
6-7am	40
7-8am	81
8-9am	68
8-10am	48
10-11am	*483
11-12N	248
12-1pm	151
1-2pm	*176
2-3pm	69
3-4pm	61
4-5pm	78
5-6pm	44

STATION (5) FRIDAY 30/4/82

TIME	TOTAL P.C.U.
6-7am	0
7-8am	15
8-9am	2
8-10am	17
10-11am	47
11-12N	*69
12-1pm	64
1-2pm	52
2-3pm	35
3-4pm	51
4-5pm	60
5-6pm	*64

STATION (3) MONDAY - 26/4/82

TIME	TOTAL P.C.U.
6-7am	343
7-8am	1084
8-9am	931
9-10am	*1106
10-11am	845
11-12N	797
12-1pm	556
1-2pm	818
2-3pm	1107
3-4pm	*1175
4-5pm	834
5-6pm	867

STATION (3) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
6-7am	205
7-8am	847
8-9am	969
9-10am	869
10-11am	1069
11-12N	*1095
12-1pm	*1558
1-2pm	1248
2-3pm	1375
3-4pm	1361
4-5pm	1086
5-6pm	* 1191

STATION (2) FRIDAY - 23/4/82

TIME	TOTAL P.C.U.
6-7am	1747
7-8am	4815
8-9am	4807
9-10am	*4988
10-11am	4349
11-12N	3871
12-1pm	3375
1-2pm	3144
2-3pm	4458
3-4pm	*5407
4-5pm	5344
5-6pm	3982

STATION (2) SATURDAY - 24/4/82

TIME	TOTAL P.C.U.
6-7am	1471
7-8am	3150
8-9am	3657
9-10am	3508
10-11am	*3980
11-12N	3836
12-1pm	3056
1-2pm	3307
2-3pm	2686
3-4pm	2834
4-5pm	*4040
5-6pm	3108

STATION (3) MONDAY - 26/4/82

8-9am	831
9-10am	*1106
10-11am	845
11-12N	797
12-1pm	956
1-2pm	819
2-3pm	1107
3-4pm	*1175
4-5pm	834
5-6pm	867

STATION (3) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
6-7am	205
7-8am	847
8-9am	969
9-10am	889
10-11am	1060
11-12N	*1095
12-1pm	*1558
1-2pm	1248
2-3pm	1375
3-4pm	1361
4-5pm	1086
5-6pm	1191

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STATION (2) FRIDAY - 23/4/82

TIME	TOTAL P.C.U.
6-7am	1747
7-8am	4815
8-9am	4607
9-10am	*4988
10-11am	4349
11-12N	3871
12-1pm	3375
1-2pm	3144
2-3pm	4458
3-4pm	*5407
4-5pm	5314
5-6pm	3982

STATION (2) SATURDAY - 24/4/82

TIME	TOTAL P.C.U.
6-7am	1471
7-8am	3150
8-9am	3657
9-10am	3588
10-11am	*3960
11-12N	3636
12-1pm	3058
1-2pm	3307
2-3pm	2686
3-4pm	2634
4-5pm	*4046
5-6pm	3108

STATION (3) FRIDAY - 23/4/82

TIME	TOTAL P.C.U.
6-7am	584
7-8am	1083
8-9am	1113
9-10am	*1236
10-11am	1141
11-12N	1032
12-1pm	*1388
1-2pm	1371
2-3pm	1159
3-4pm	1172
4-5pm	1229
5-6pm	619

STATION (3) SATURDAY - 24/4/82

TIME	TOTAL P.C.U.
6-7am	229
7-8am	762
8-9am	868
9-10am	727
10-11am	1000
11-12N	*1193
12-1pm	*2113
1-2pm	1289
2-3pm	1287
3-4pm	996
4-5pm	1002
5-6pm	1528

STATION (3) FRIDAY - 23/4/82

TIME	TOTAL P.C.U.
7-8am	1050
8-9am	1113
9-10am	*1236
10-11am	1141
11-12N	1032
12-1pm	*1388
1-2pm	1371
2-3pm	1158
3-4pm	1172
4-5pm	1229
5-6pm	819

STATION (3) SATURDAY - 24/4/82

TIME	TOTAL P.C.U.
6-7am	229
7-8am	762
8-9am	868
9-10am	727
10-11am	1000
11-12N	*1193
12-1pm	*2113
1-2pm	1289
2-3pm	1287
3-4pm	996
4-5pm	1002
5-6pm	1528

TIME	TOTAL P.C.U.
6-7am	283
7-8am	1403
8-9am	1540
9-10am	*1661
10-11am	1552
11-12N	1265
12-1pm	*1772
1-2pm	1406
2-3pm	1564
3-4pm	1468
4-5pm	1257
5-6pm	1223

STATION (4) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
6-7am	352
7-8am	1262
8-9am	1733
9-10am	1470
10-11am	*1755
11-12N	1604
12-1pm	*1653
1-2pm	1544
2-3pm	1383
3-4pm	1301
4-5pm	1451
5-6pm	1095

STATION (4) FRIDAY - 23/4/82

TIME	TOTAL P.C.U.
8-9am	1216
9-10am	*1757
10-11am	1644
11-12N	1375
12-1pm	1002
1-2pm	*1832
2-3pm	1267
3-4pm	1133
4-5pm	1185
5-6pm	1119

STATION (4) SATURDAY - 24/4/82

TIME	TOTAL P.C.U.
6-7am	167
7-8am	477
8-9am	975
9-10am	1011
10-11am	769
11-12N	*1132
12-1pm	*951
1-2pm	805
2-3pm	806
3-4pm	747
4-5pm	853
5-6pm	731

Gestetner offset

STATION (5) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
7-8am	28
8-9am	62
9-10am	58
10-11am	60
11-12N	*75
12-1pm	*92
1-2pm	36
2-3pm	54
3-4pm	48
4-5pm	45
5-6pm	28

STATION (5) WEDNESDAY - 28/4/82

TIME	TOTAL P.C.U.
6-7am	41
7-8am	46
8-9am	82
9-10am	61
10-11am	*92
11-12N	49
12-1pm	*72
1-2pm	59
2-3pm	71
3-4pm	48
4-5pm	46
5-6pm	31

Gestetner offset

6-7am	40
7-8am	61
8-9am	68
9-10am	48
10-11am	*483
11-12N	248
12-1pm	151
1-2pm	*176
2-3pm	88
3-4pm	61
4-5pm	78
5-6pm	44

STATION (5) FRIDAY 30/4/82

TIME	TOTAL P.C.U.
6-7am	0
7-8am	15
8-9am	2
9-10am	17
10-11am	47
11-12N	*69
12-1pm	64
1-2pm	52
2-3pm	35
3-4pm	51
4-5pm	60
5-6pm	*64

STATION (2) MONDAY - 26/4/82

TIME	TOTAL P.C.U.
8-9am	3979
9-10am	4024
10-11am	*4108
11-12N	2939
12-1pm	3449
1-2pm	2952
2-3pm	3454
3-4pm	*3998
4-5pm	2864
5-6pm	3046

STATION (2) TUESDAY - 27/4/82

TIME	TOTAL P.C.U.
6-7am	1506
7-8am	3870
8-9am	*3970
9-10am	3832
10-11am	3783
11-12N	3372
12-1pm	*3851
1-2pm	3609
2-3pm	3763
3-4pm	3777
4-5pm	3681
5-6pm	3490

Gesteiner offset

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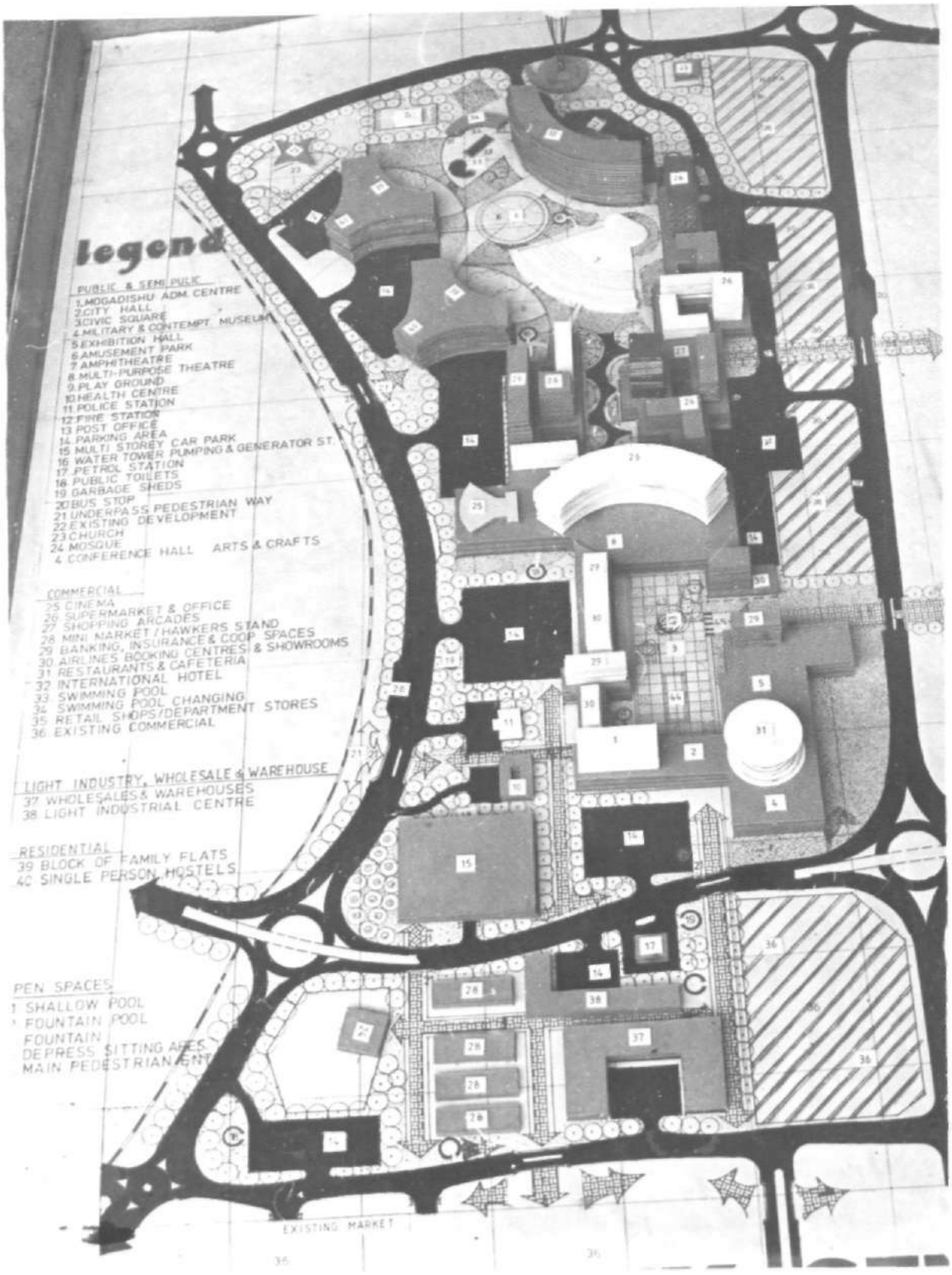
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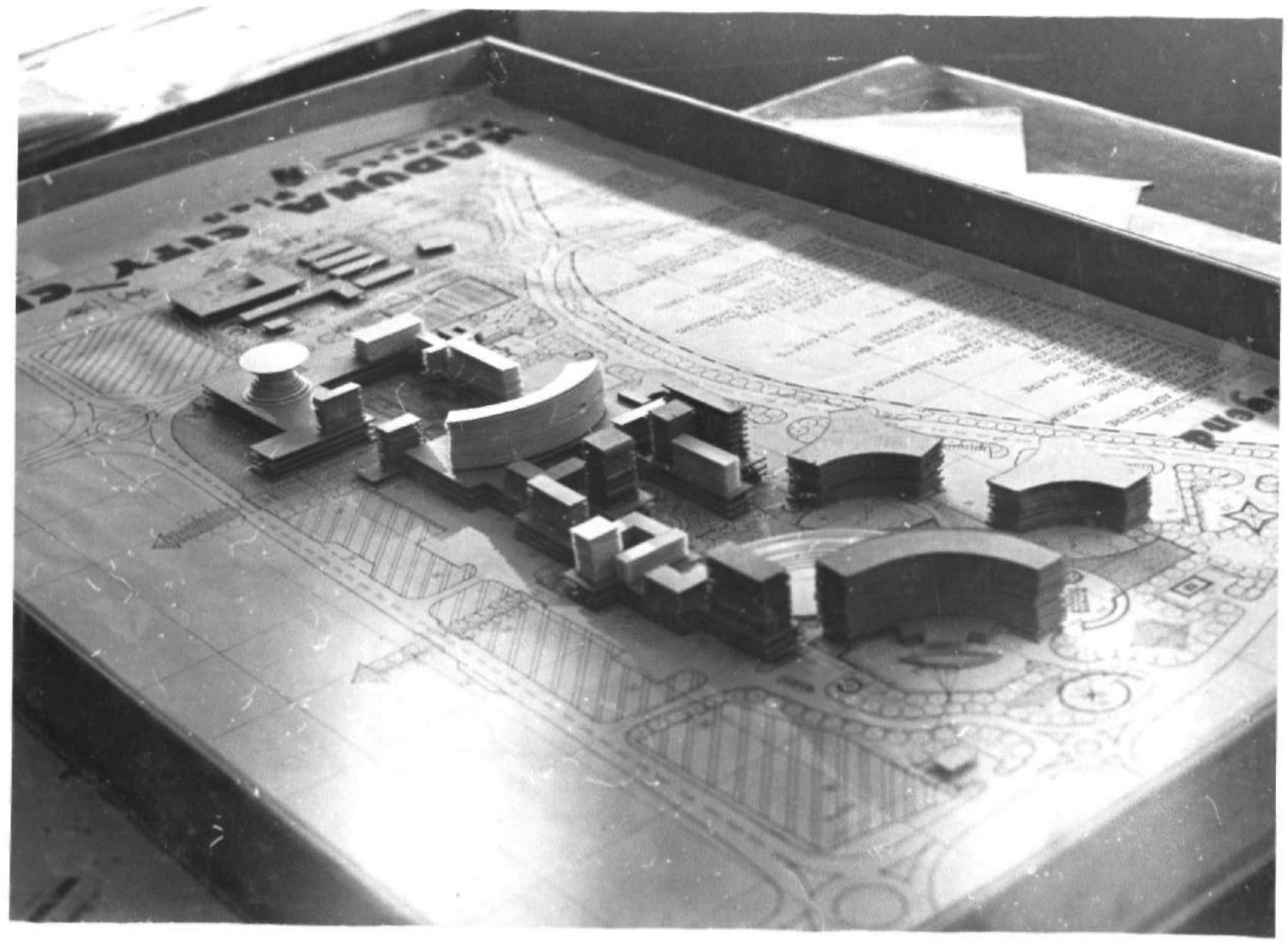
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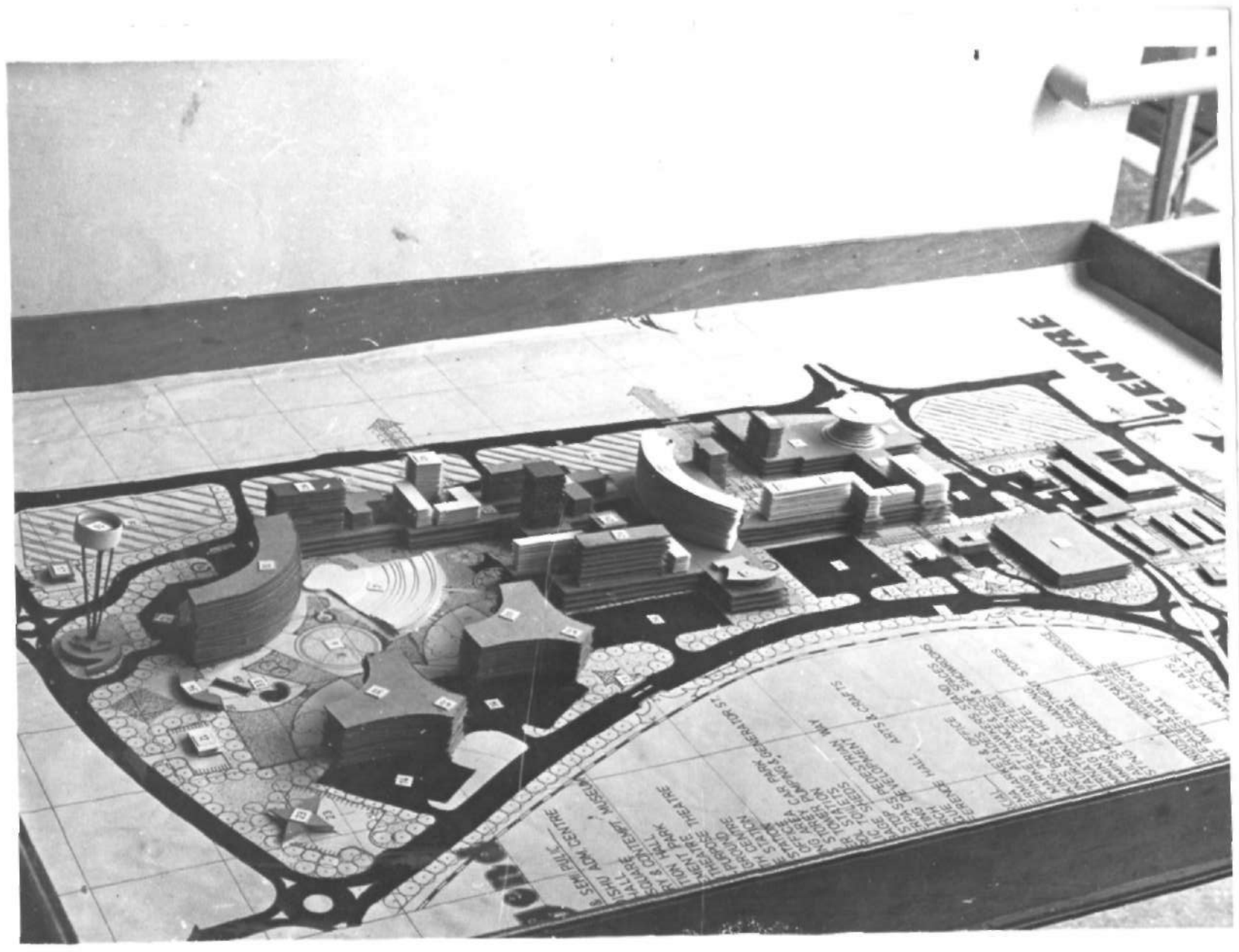
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legend
PUBLIC & SEMI PUBLIC
1.MOGADISHU ADM. CENTRE
2.CITY HALL
3.CIVIC SQUARE
4.MILITARY & CONTEMPT. MUSEUM
5.EXHIBITION HALL
6.AMUSEMENT PARK
7.AMPHITHEATRE
8.MULTI-PURPOSE THEATRE
9.PLAY GROUND
10.HEALTH CENTRE
11.POLICE STATION
12.FIRE STATION
13.POST OFFICE
14.PARKING AREA
15.MULTI STOREY CAR PARK
16.WATER TOWER PUMPING & GENERATOR ST.
17.PETROL STATION
18.PUBLIC TOILETS
19.GARBAGE SHEDS
20.BUS STOP
21.UNDERPASS PEDESTRIAN WAY
22.EXISTING DEVELOPMENT
23.CHURCH
24.MOSQUE
4.CONFERENCE HALL ARTS & CRAFTS
COMMERCIAL
25.CINEMA
26.SUPERMARKET & OFFICE
27.SHOPPING ARCADES
28.MINI MARKET / HAWKERS STAND
29.BANKING, INSURANCE & COOP SPACES
30.AIRLINES BOOKING CENTRES & SHOWROOMS
31.RESTAURANTS & CAFETERIA
32.INTERNATIONAL HOTEL
33.SWIMMING POOL
34.SWIMMING POOL CHANGING
35.RETAIL SHOPS/DEPARTMENT STORES
36.EXISTING COMMERCIAL
LIGHT INDUSTRY, WHOLESALE & WAREHOUSE
37.WHOLESALES & WAREHOUSES
38.LIGHT INDUSTRIAL CENTRE
RESIDENTIAL
39.BLOCK OF FAMILY FLATS
40.SINGLE PERSON HOSTELS
PEN SPACES
1 SHALLOW POOL
FOUNTAIN POOL
FOUNTAIN
DEPRESS SITTING AREA
MAIN PEDESTRIAN ENT
EXISTING MARKET




CIVIC CENTRE