

POPULAR URBAN SETTLEMENTS IN ATHENS
A Comparative Study of Low Income Housing

by

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Dipl. Arch., National Technical University of Athens, 1977
M.Arch., Washington University, St. Louis, Mo., 1978

Submitted to the Department of Architecture
in Partial Fulfillment of the Requirements for the
Degree of Master of Science in Architecture Studies
at the Massachusetts Institute of Technology
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May 8, 1981

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY Prof. Julian Behart, Chairman
Departmental Committee on Graduate Students
MAY 28 1981

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ABSTRACT

This study is concerned with aspects of housing and urban development related to the lower income groups in the context of urbanization in Athens, Greece. It identifies and evaluates typical low income housing settlements presently existing in Athens and develops a land utilization model along with a set of related planning guidelines to provide for future planned low income urban developments. The approach has been to determine the requirements of a low income housing program by identifying and evaluating the inadequacies and potentials of related existing conditions.

Thesis Supervisor: Horacio Caminos
Title: Professor of Architecture

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PREFACE

CONTENT:

This study is concerned with aspects of housing and urban development related to the lower income groups in the context of urbanization in Athens, Greece. It identifies and evaluates typical low income settlements presently existing in Athens and develops a land utilization model along with a set of related planning guidelines to provide for future planned low income urban development.

The study includes:

- Introduction to the urban context of Athens in terms of urban growth and related demographics, socio-economic and housing conditions.
- Case studies of selected urban dwelling environments within the spectrum of low income housing.
- Evaluations of these case studies in terms of physical aspects, utilities and services, land utilization and layout efficiency.
- Proposed model and planning policies/goals for a low income development of a selected site in the periphery of Athens, with focus on land subdivision, land utilization and utility infrastructure.

OBJECTIVES:

- To identify and describe a representative cross-section of low income housing situations existing in Athens urban area.
- To illustrate those situations in terms of their physical and socio-economic environment using a number of selected case studies.
- To organize these case studies into a comparative frame-

work in order to facilitate analysis and evaluation.

- To promote a model/program for future urban settlement development compatible with the lower income groups, in the urban context of Athens.

APPLICATION:

This study is intended: a) as a reference for survey/evaluation of urban dwelling environments; b) as a reference for housing policy/planning for the lower income sector.

DATA:

The information for the study was derived from various sources:

- Surveys, maps and aerial photographs from the Ministry of Housing in Athens;
- Studies and surveys by students from the University of Athens and by various individuals;
- Field surveys, studies and photographs by the author.

The study was carried out through the Urban Settlement Design Program at M.I.T. The preliminary work was established during the fall of 1979/Spring 1980. Detailed survey was carried out in Athens during the summer of 1980. The analysis/evaluation of the case studies and the development of the model were completed during the Fall of 1980/Spring 1981. The case study analysis is based on methodology developed in the Urban Settlement Design Program at M.I.T.

ATHENS, GREECE

URBAN CONTEXT

I. PRIMARY INFORMATION:

Athens is located in a basin surrounded by low mountains on the east, north and west and by the Aegean sea on the south, at a latitude of 38° north and a longitude of 24° east. Moderate rainfall, low humidity, slight temperature range, moderate winds and no snowfall are the main characteristics of the climate in the basin.

2. HISTORY:

Athens became the capital of Greece in 1833, shortly after independence from the Turkish occupation. It was then a small medieval village on the slopes of the Acropolis. In its history of urban growth, the major events, related to population increase and consequent housing problems, are the following:

- The influx of refugees from Asia Minor, as a result of war, in the period between 1920-1928, which almost doubled the population of Athens in a relatively short period of time, creating an urgent housing problem and forming a ring of distinct low income communities around the city.
- The excessive internal migration in the period between 1950-1956 related to the influx of the rural population into the city in search of a better living. During this period the rate of urbanization was faster than the public authorities could cope with and as a result, illegal settlements developed all over the Athens basin, forming a second ring of low income communities on the periphery of the city. It is estimated that 45% of the population increase of Athens during this period was housed in illegal settlements.

3. ECONOMY:

Athens is the major commercial, industrial and administrative center of the

country. The economic importance of Athens is indicated in the following figures representing participation in the total economic activity of the country. In 1971 the city could claim:

- 29% of the economically active population.
- 46.4% of the secondary sector (industries).
- 44.2% of the tertiary sector (services, commerce, transportation).
- 60% of the GNP generated by the urban centers.

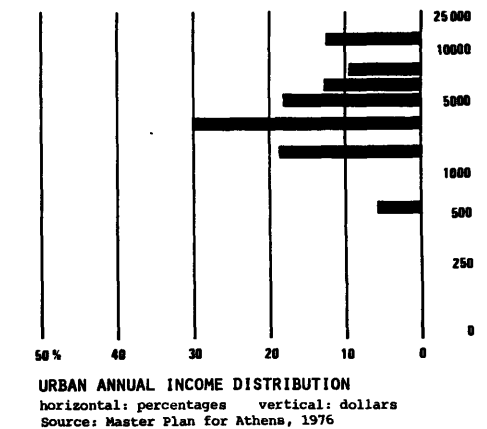
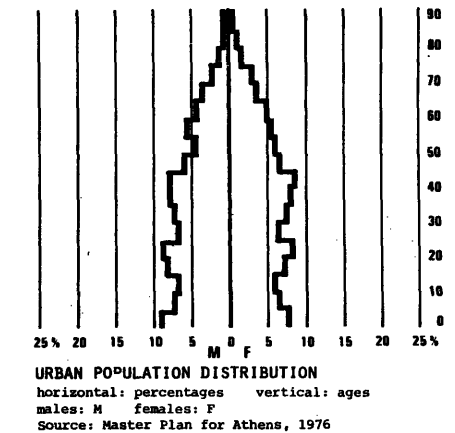
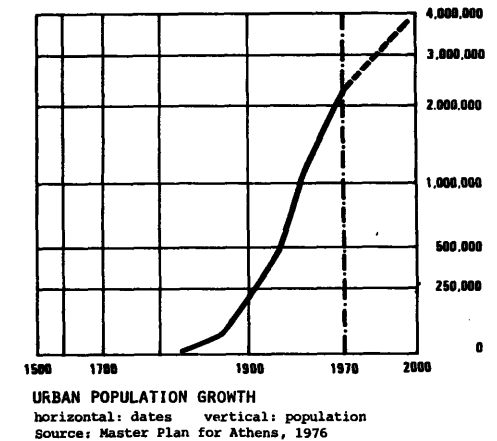
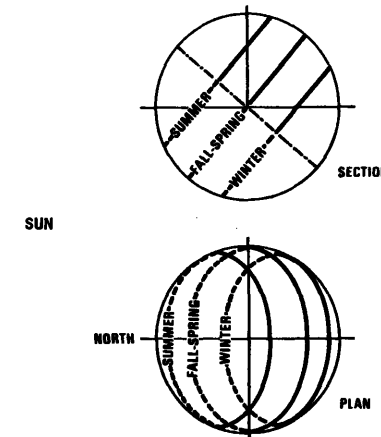
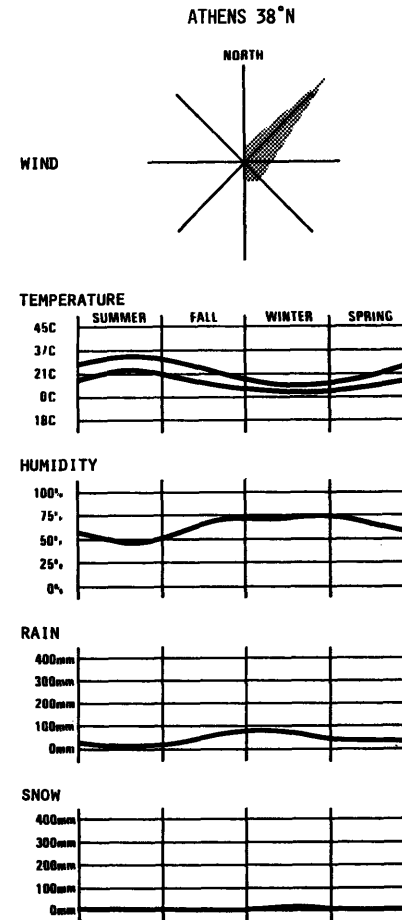
The annual per capita income for the city in 1971 was estimated at 48100 drs (US \$ 1200).

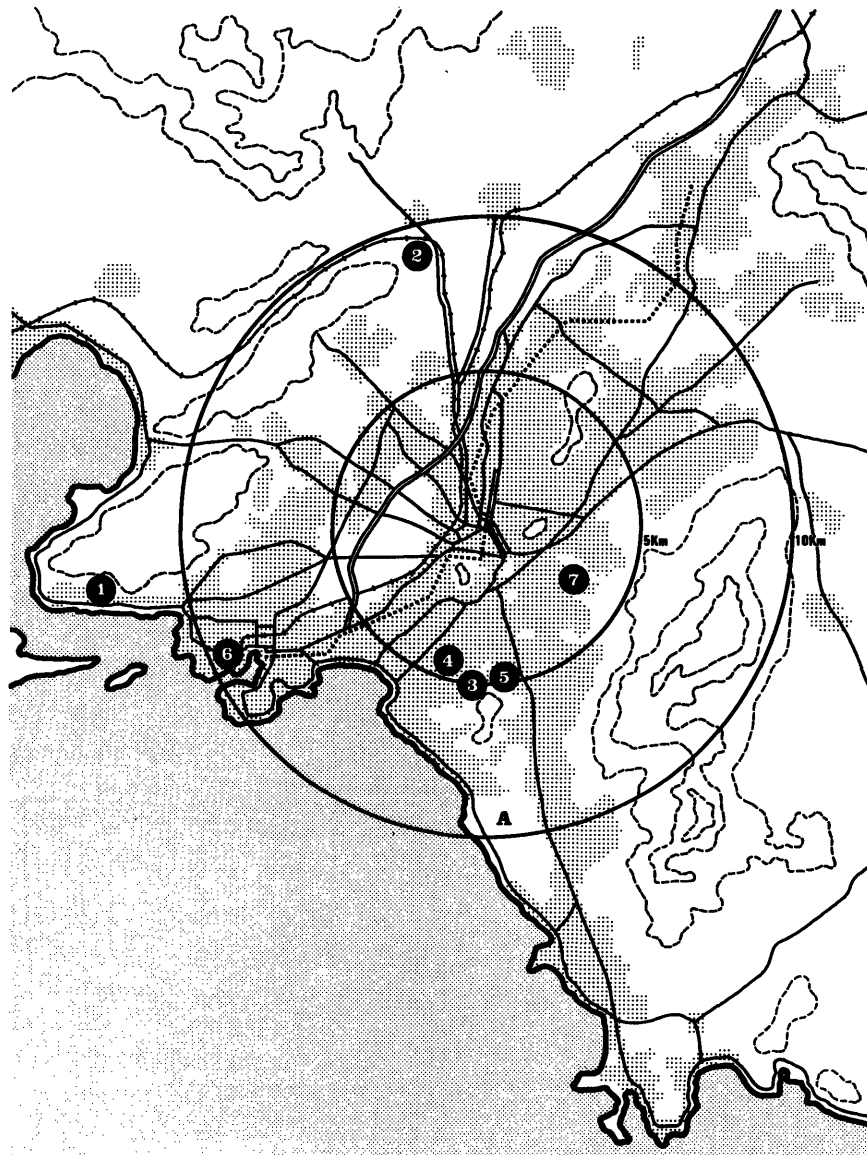
4. DEMOGRAPHY:

The estimated population of Athens in 1971 was 2,773,000, which represented 31.6% of the total population of Greece. The rate of average annual population increase was 3.0% since 1951, 4 times higher than the rate of increase of the total population of the country. 46.7% of the total population is between 15-45 years of age (productive ages) as a result of the high rate of internal migration between 1961-1971.

5. SOCIO-CULTURAL:

The average annual per capita income is 48,100 drs (US \$1,200), while the average annual income per household is 153,000 drs (US \$3,800). The low income groups, with an income of 10,000 drs and below, represent 49.7% of the total number of households in the city. The very low income group, 5,000 drs and less (below subsistence level), represents 19.5% of the total number of households and 5.6% of the total available income, while the high income group, 30,000 drs and above, represents 49.7% of the total number of households and 24.3% of the total available income.





KEY

- A** AIRPORT
 — PRIMARY ROAD
 + + + + RAILROAD
 [Hatched Box] BUILT-UP AREA

URBAN TOPOGRAPHY AND CIRCULATION

1:250000

CASE STUDIES

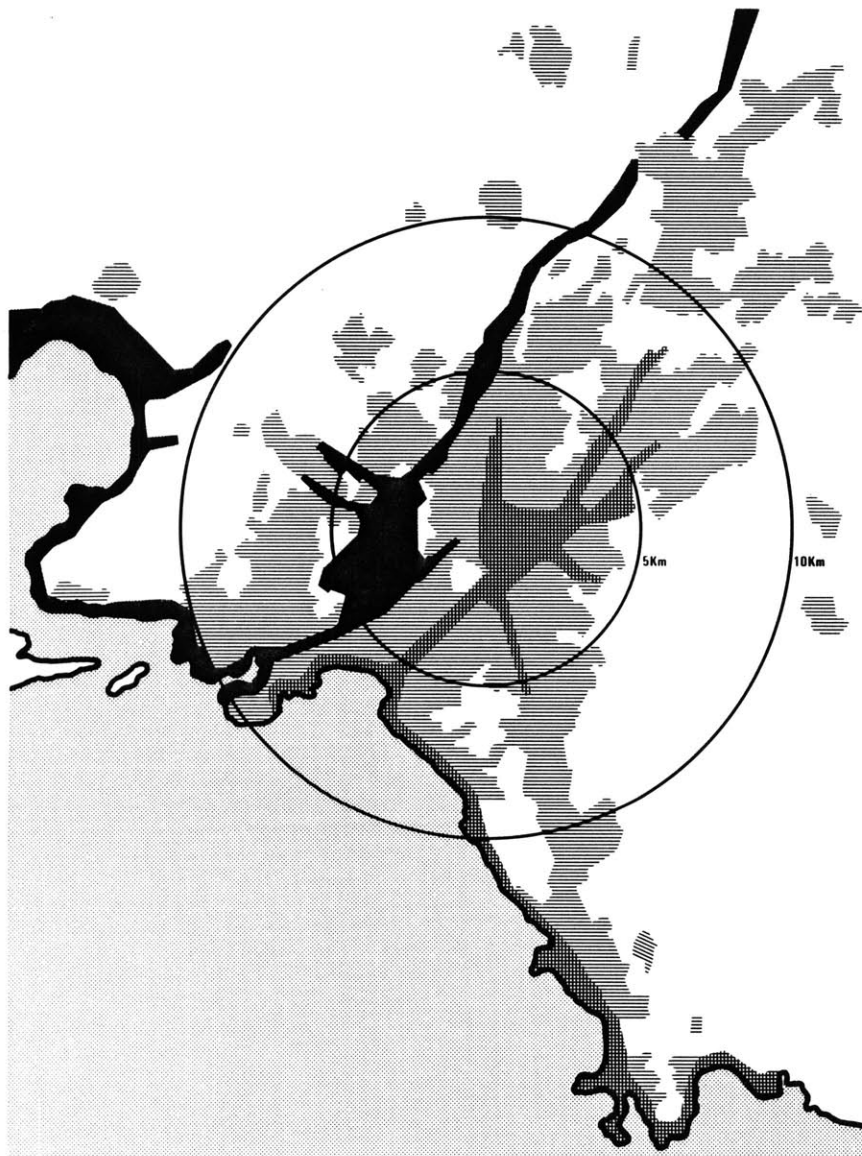
- ① PLAKOUDA, PERAMA
- ② ZOFRIA, ANO LIOSIA
- ③ MESONISI, BRACHAMI
- ④ TAXIARCHIS, BRACHAMI
- ⑤ ANTHEON, BRACHAMI
- ⑥ DRAPETSONA
- ⑦ PROSFIGIKA, KESARIANI

6. SOCIO-ECONOMIC:

The majority of low income groups are housed in the post-war low income settlements in the northeastern outskirts of Athens. These are settlements generated through the illegal housing process and occupy vast areas of the Athens basin extending as far as the steep slopes of the surrounding mountains. The low income groups also occupy an extensive part of the inner ring of the city, consisting either of pre-war refugee communities or popular communities. The majority of the popular communities were also formed through the illegal process and were gradually included into the town map as new layers of illegal settlements pushed the periphery outwards. Upper income groups are concentrated either in the middle-high income residential areas immediately surrounding the city center, or in the higher income suburbs on the northeast and along the coast on the southeast.

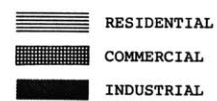
7. HOUSING:

The housing need in Athens is determined by the population increase due to urbanization, physical growth and existing housing deficit. The large majority of the housing needed is the result of urbanization which mainly involves the lower income groups. The commercial cost of housing is beyond the financial means of these groups, while government housing programs, representing only 1.5% of the total housing market, are limited to a small number of beneficiaries. As a result, the majority of low income settlers, lacking an alternative, choose to settle illegally on the periphery of the city. Vagueness of the legal code, tolerance or indifference on the part of the authorities, and lack of planning concerning land use and development encourage the proliferation of these settlements. The state's "policy" concerning the problem involves police measures and heavy penalties followed by retrospective laws that legalize the settlements, but restrict their future development. This attitude indicates that illegal building activity has been accepted by the government as the solution to the housing problem in Athens.



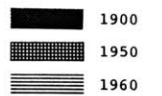
URBAN LAND USE PATTERN

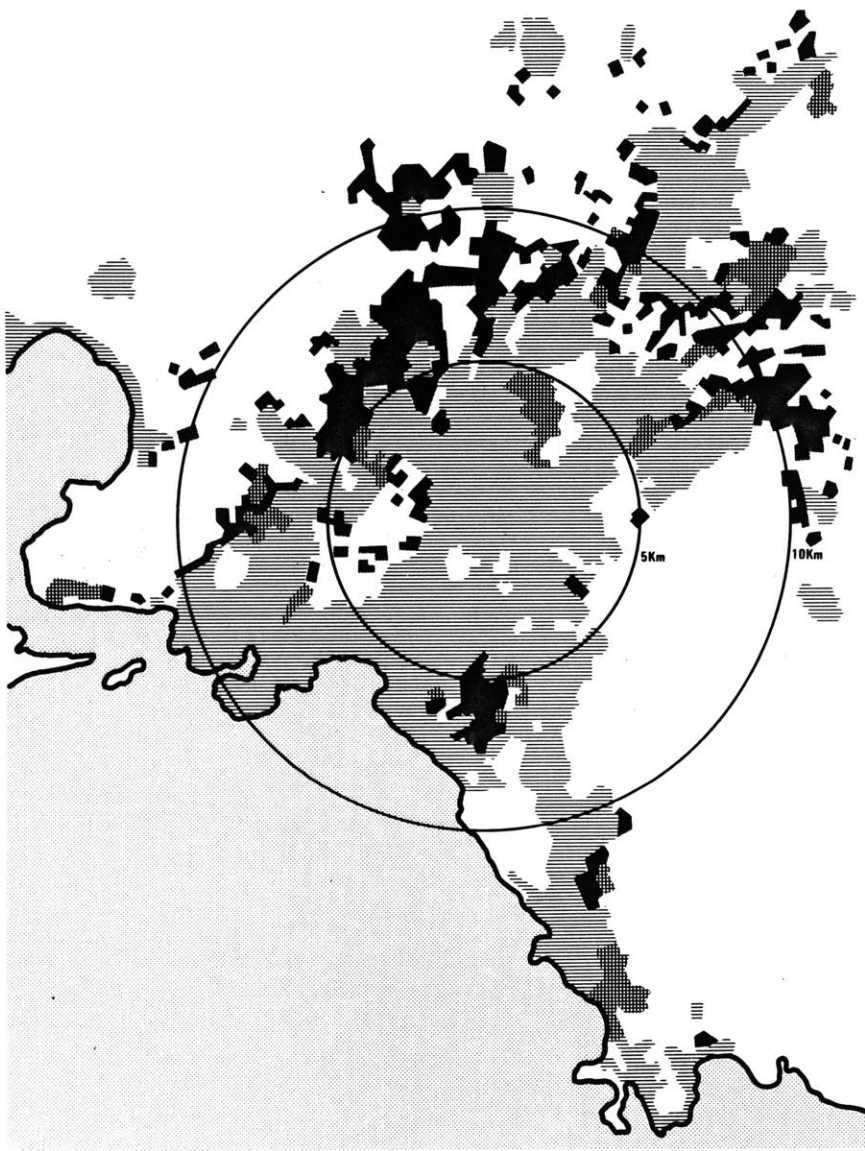
AREAS



URBAN GROWTH PATTERN

DATES





ILLEGAL SETTLEMENT PATTERN

KEY

- AREAS OF ILLEGAL SETTLEMENTS UP TO 1962
- AREAS AUTHORIZED WITHIN 1968
- AREAS WITHIN APPROVED TOWN PLAN UP TO 1958



URBAN INCOME PATTERN

INCOMES

- LOW
- LOW-MIDDLE
- MIDDLE-HIGH
- HIGH

CASE STUDIES

INTRODUCTION

The focus of this section of the study is on seven selected case studies, representing typical low income housing settlements, both popular and institutional, existing at the present time in Athens.

The intent is to describe these settlements illustrating their physical and socio-economic environment and to identify basic patterns in various aspects of the related housing process.

The case studies are drawn from field surveys and provide first-hand material for the description, analysis and evaluation of the selected housing systems.

Each case study is presented at four levels:

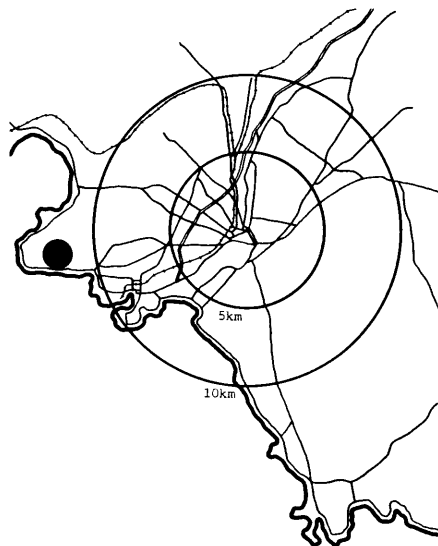
- a) a locality containing the particular housing system
- b) a selected segment within the locality
- c) a selected block within the locality segment
- d) a typical dwelling unit

CASE STUDIES

1. PLAKOUDA, PARAMA:	Squatter Settlement	14
2. ZOFRIA, ANO LIOSIA:	Illegal Settlement	20
3. MESONISI, BRACHAMI:	Illegal Settlement	26
4. TAXIARCHIS, BRACHAMI:	Popular Settlement	32
5. ANTHEON, BRACHAMI:	Popular Settlement	38
6. DRAPETSONA:	Public Housing	46
7. PROFIGIKA, KESARIANI:	Refugee Settlement	54

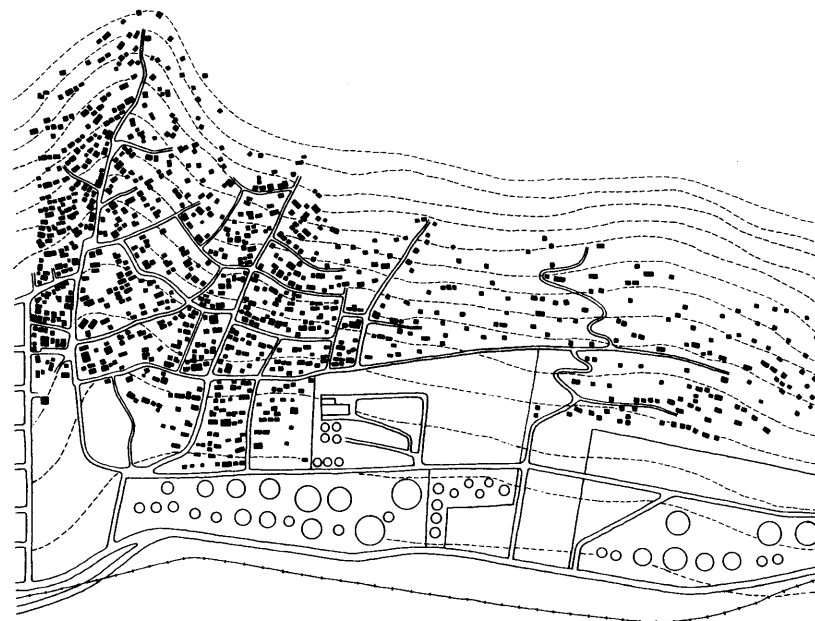
1 PLAKOUDA, PERAMA

SQUATTER SETTLEMENT



LOCATION: The settlement is located in the municipality of Perama in the western part of the Athens basin. It occupies the area starting from the east border of the city of Perama and from the north side of the Shell Oil refinery tanks and extends all the way up the steep mountain slopes on the north and to the Ikonio settlement on the east

ORIGINS: The area the settlement now occupies was part of the property owned by the Church along with a much larger area on the southern part of the municipality of Perama. Because this part of land was within the zone of minimum safety distance from the Shell Oil refinery tanks it was left vacant. The major part of the area was massively occupied by squatters in 1974. Since then the squatter settlement has been growing, though at a slower rate. The squatters consisted either of local shipyard workers who couldn't afford the high rents in the city of Perama or settlers from other areas of Athens facing pressing housing needs. Both were aware of the favorable squatting conditions there, since the area had a long history of tolerating squatter settlements on the available Church property.



0 100 500m
1:10000

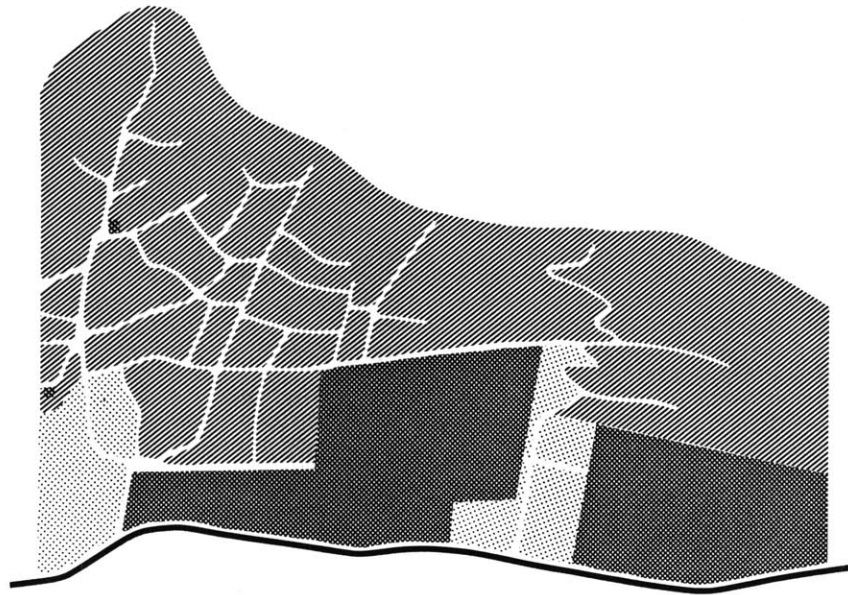
LOCALITY PLAN

LAYOUT: There is no clear structure in the land subdivision of the settlement since it has grown by the accretion of individual and small-group decisions. This lack of structure has been further intensified by difficulties of the area's steep topography. All the phases of the squatting procedure coexist in the settlement. This includes

vacant cardboard shanties built to secure a piece of land, inhabited concrete block rooms lacking sanitary facilities, multi-roomed houses in various stages of development from the initial shanty to the reinforced concrete skeleton, and finally houses built out of reinforced concrete replacing the original demolished shanty.

KEY

S School	SC Social Center
Pg Playground	P Plaza
Pk Park	— Bus Route



AREAS

	RESIDENTIAL
	COMMERCIAL
	INDUSTRIAL
	OPEN SPACES

LOCALITY LAND USE PATTERN



LAND USE: The occupied land accounts for the majority of the land use. The open spaces are limited to the streets, passageways and portions of the site too steep to occupy. There is only one shop in the settlement which sells groceries. A small taverna on the Lianitou Road seems to be the only form of recreation for the inhabitants.

A municipality stadium is under construction in the open area on the south end of the settlement. There is also a community playground in the open occupied land along the main road next to the Shell Oil tanks. Besides this there are no other community facilities available in the settlement and the inhabitants use the ones in the city of Perama.

KEY

—	VEHICULAR
.....	PEDESTRIAN



LOCALITY CIRCULATION PATTERN



CIRCULATION: The access to the settlement is from the artery of Leoforos V.Georgiou by way of the Lianitou Road which separates the city of Perama from the squatter settlement, and by way of the service road which provides access to the Shell Oil Refineries. There are two predominant streets which start from these access roads and run through

the settlement, perpendicular to the contour lines. These are accessible by car only up to a certain point. The rest of the streets are for pedestrian use, consisting of principle paths running parallel to the contours and narrower connecting paths with stairways on the steeper slopes.

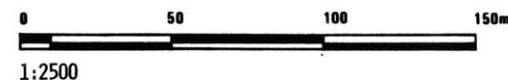
COMMUNITY FACILITIES: There is one playground in the settlement, located along the main artery between the Shell Oil tanks and Lianitou Road. Besides this, there are no other community facilities available in the settlement and the inhabitants use the ones in the adjacent city of Perama, which are very limited and inadequate. There is one kindergarten, three primary schools, one secondary school and one technical school for the entire municipality. There is a social service center which also serves as a health center for the most needy of the inhabitants.

UTILITIES AND SERVICES: The settlement has electricity and street lighting at a minimum level for which the inhabitants shared the expenses. A small number of houses have telephone service. The settlement's basic problem is the lack of appropriate water supply and sewage disposal. Sewage is treated by cesspits which are usually a simple hole in the ground, unsanitary and inadequate. Houses built after 1976 were prevented from digging even these, as a police measure to prevent squatting. The residents of these houses use the toilet facilities of neighboring houses, which belong to friends or relatives. The water supply problem has been temporarily solved by connecting lines to the municipal water system in the adjacent Perama neighborhoods, after obtaining permission from the municipality. The inhabitants shared the expense of the installation among themselves. The pipes are exposed, running along the streets and do not function properly. There is a bus route on the main artery of the municipality which provides public transportation to the Piraeus and Athens city centers.

INCOME: The average monthly income for most of the households ranges between 12,000-20,000 drs (\$240-\$400).



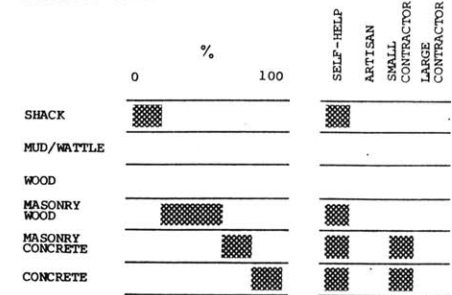
LOCALITY SEGMENT AIR PHOTOGRAPH





LOCALITY SEGMENT PLAN

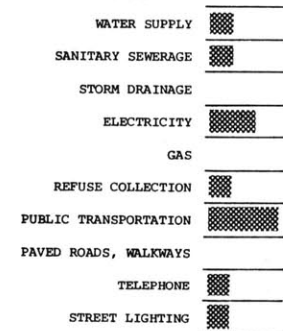
LOCALITY CONSTRUCTION TYPES



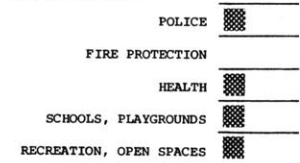
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



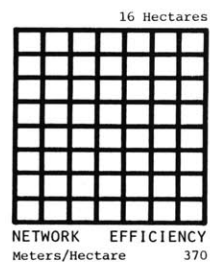
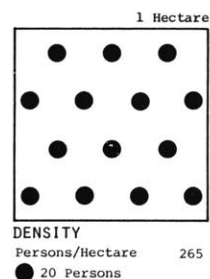
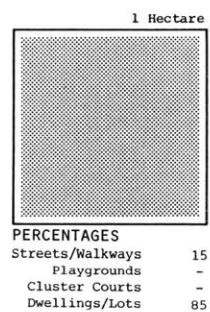
LOCALITY COMMUNITY FACILITIES



The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

LAND UTILIZATION DIAGRAMS



LOCALITY BLOCK LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.05	14.7
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.29	85.3
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.34	100.0

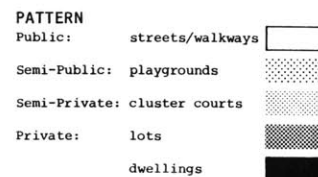
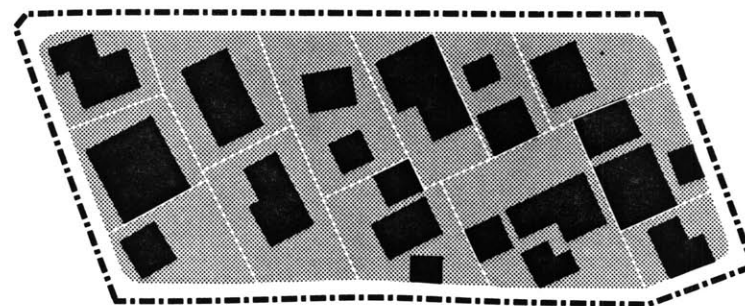
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	13	0.34	38.2
DWELLING UNITS	18	0.34	152.9
PEOPLE	90	0.34	264.7

NETWORK EFFICIENCY

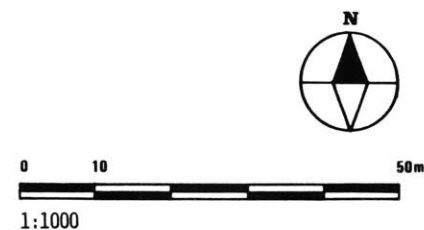
Network length (streets, walkways) / Areas served (total area) = 370 m/Ha

LOTS

Average area, dimensions = 160 m²

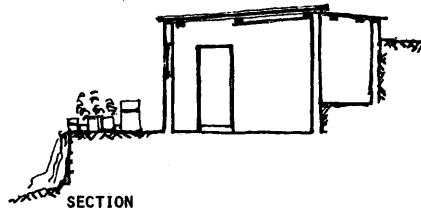


LOCALITY BLOCK PLAN

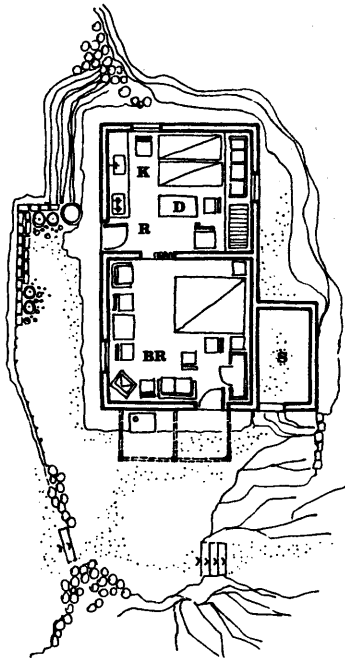




ELEVATION



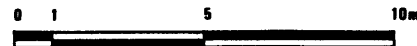
SECTION



PLAN

KEY

- R Room (multi-use)
- BR Bedroom
- K Kitchen/Cooking Area
- D Dining/Eating Area
- S Storage



TYPICAL DWELLING

1:200

PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT
 type: HOUSE
 area (sq m): 28
 tenure: LEGAL OWNERSHIP

LAND/LOT
 utilization: PRIVATE
 area (sq m): -
 tenure: EXTRALEGAL OWNERSHIP

DWELLING
 location: PERIPHERY
 type: ROW/GROUPED
 number of floors: 1
 utilization: MULTIPLE: FAMILY
 physical state: BAD

DWELLING DEVELOPMENT
 mode: INCREMENTAL
 developer: POPULAR
 builder: SELF HELP
 construction type: MASONRY/WOOD
 year of construction: 1974, 1975

MATERIALS
 foundation: CONCRETE
 floors: CONCRETE
 walls: CONCRETE BLOCK
 roof: WOOD/CORRUGATED METAL

DWELLING FACILITIES
 wc: -
 shower: -
 kitchen: -
 rooms: 2
 other: -

SOCIO-ECONOMIC DATA (related to user)

GENERAL: SOCIAL
 user's ethnic origin: GREEK
 place of birth: THESALIA
 education level: NONE

NUMBER OF USERS
 married: 4
 single: -
 children: 2
 total: 6

MIGRATION PATTERN
 number of moves: 2
 rural - urban: 1965
 urban - urban: 1974
 urban - rural: -
 why came to urban area: EMPLOYMENT

GENERAL: ECONOMIC
 user's income group: LOW
 employment: CONSTRUCTION WORKER
 distance to work: VARIES
 mode of travel: PUBLIC

COSTS
 dwelling unit: NA
 land - market value: NA

DWELLING UNIT PAYMENTS
 financing: SELF FINANCED
 rent/mortgage: NA
 % income for rent/mortgage: NA

2 ZOFRIA, ANO LIOSIA

ILLEGAL SETTLEMENT



LOCATION: The locality is part of the municipality of Ano Liosia located at the north-eastern part of Athens approximately 8.5km from the city center. It occupies the southern part of Ano Liosia, with the municipalities of Kamatero on the south and Zefirio on the east. It is situated at the base of Mount Gerovouno and is bounded by the Athens-Korinthos railroad on the north and the artery of Leoforos Filis on the east. The western border of the locality is undetermined and the settlement keeps expanding towards that direction.

ORIGINS: The area used to be part of the agricultural land surrounding Ano Liosia, one of the villages in the periphery of the city of Athens in 1900. It was subdivided by the landowners into plots after the internal migration influx of the fifties when new settlers started coming into the area. The majority of the population settled there illegally between 1960 and 1970. The present status of the locality is still that of an illegal settlement.



LOCALITY PLAN



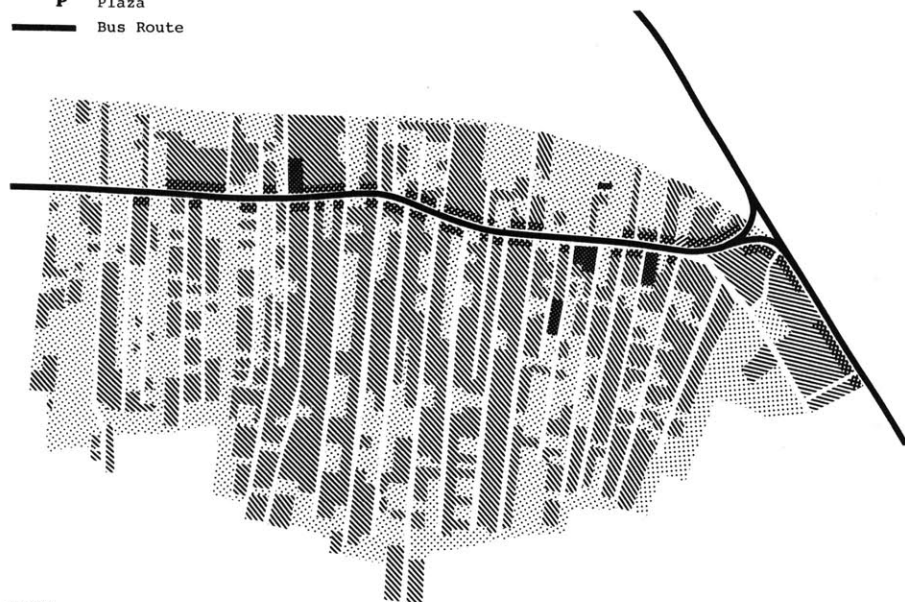
0 100 500m
1:10000

LAYOUT: The present layout of the settlement is the result of its original land subdivision which consisted of long narrow strips of land having access to the main road on the north. When the land was subdivided into plots for the low income settlers, there was a road formed through the strip of land from the main road, providing access to the plots on each side.

As a result the layout of the locality consists of a series of parallel earth roads emerging from the main asphalt road on the north and running all the way up the steep slopes on the south. Most of the lots are very small, the most common size being 120 - 150 sq.m. A large number of lots are still undeveloped while large areas of land are left vacant.

KEY

- S** School
Pg Playground
Pk Park
Ch Church
SC Social Center
P Plaza
 — Bus Route



AREAS

- RESIDENTIAL
 — COMMERCIAL
 — INDUSTRIAL
 — OPEN SPACES



0 100 500m

1:10000

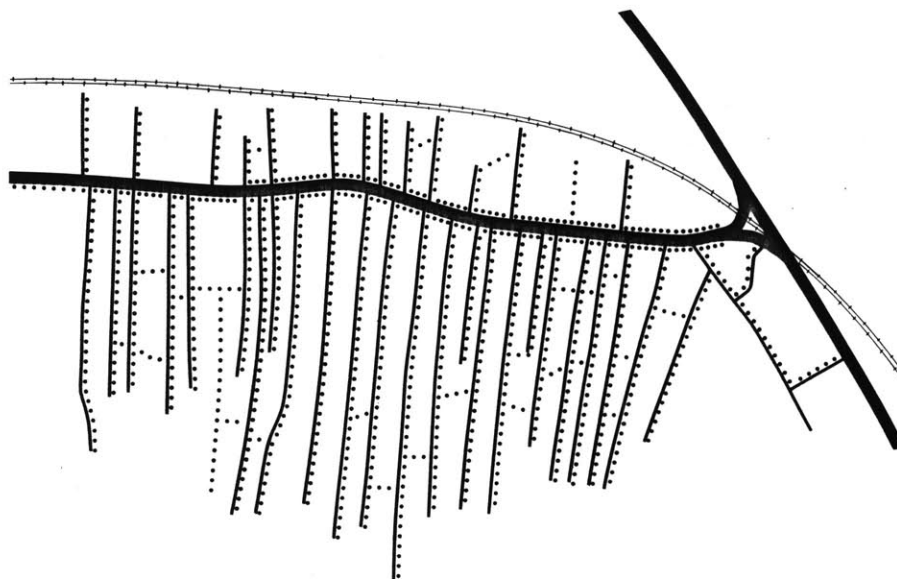
LOCALITY LAND USE PATTERN

LAND USE: The settlement is predominantly residential with commercial facilities concentrated only along the main road on the north side. Presently the main through traffic makes this road dangerous for pedestrian use and inconvenient for commercial activity. There are also a few light industries scattered along the main roads on the north and east side of the settlement.

CIRCULATION: The access to the settlement is along the main road on the north side which runs through the locality connecting the north-eastern communities of Athens with the industrial areas of Aspropyrgos and Elefsina. Because there is a number of small industries, quarries and garbage dumps along this road beyond the locality, it carries a very heavy industrial traffic.

KEY

- VEHICULAR
 PEDESTRIAN



0 100 500m

1:10000

LOCALITY CIRCULATION PATTERN

Though asphalt paved, it is in bad condition and very narrow (11m. wide) for the amount of traffic it carries. The rest of the locality circulation consists of a series of parallel earth roads perpendicular to the main street on the north, at very short intervals (sometimes the width of a lot). These roads are residential, very narrow (4-7m. wide) and in bad

shape. There is no connection between the majority of them except for the occasional vacant lots. They run perpendicular to the contours and during the winter rainfalls carry the water from Mount Gerovouno down to the main street. The lack of paving or any storm drainage consideration makes them difficult to use during this season.

COMMUNITY FACILITIES: There are two schools in the settlement, a kindergarten and a primary school. Both are housed in insufficiently equipped rented buildings, one next to the railroad tracks and one on the main road. There is no secondary school in the settlement and the older children have to commute to the adjacent municipalities. Also there is no public land available for community facilities such as athletic facilities, playgrounds, plazas, community center and health facilities. The recreation of the inhabitants is limited to a movie theater and the few coffee shops on the main road.

UTILITIES AND SERVICES: The settlement has had electricity and street lighting since 1960 as well as telephone service. Water lines were installed by the municipality in 1978. The sewage problem is solved on an individual basis since each house has its own cesspit. The roads are all unpaved except for the main commercial roads on the north and east side of the locality. Public transportation is available along the main roads.

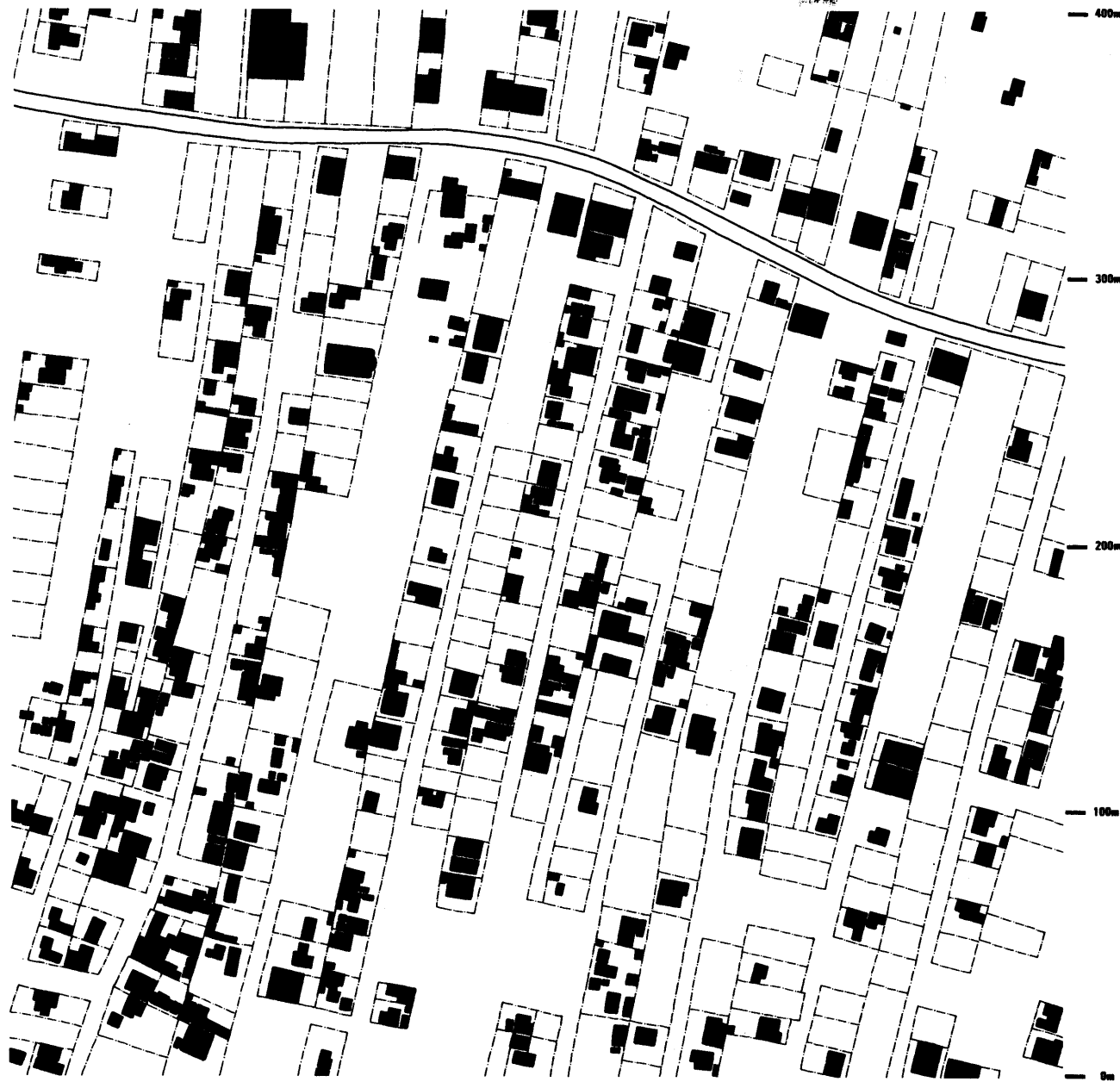
POPULATION: The present population of the locality is approximately 5000, with an average of 5 persons/household.

INCOME: The average monthly income for most of the households ranges between 12,000-20,000 drs (\$240-\$400). This allows a living barely above the subsistence level considering the fact that the households avoid rent expenses by owning a house.

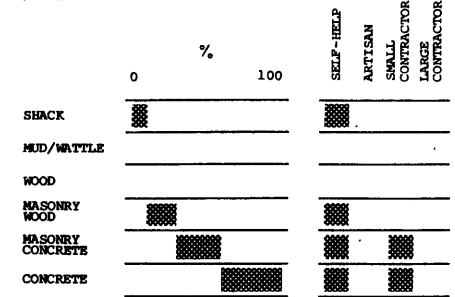


LOCALITY SEGMENT AIR PHOTOGRAPH





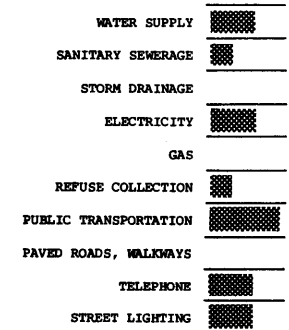
LOCALITY CONSTRUCTION TYPES



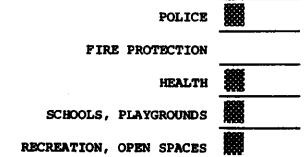
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



LOCALITY COMMUNITY FACILITIES

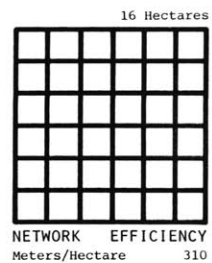
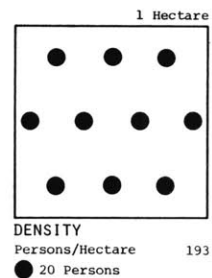
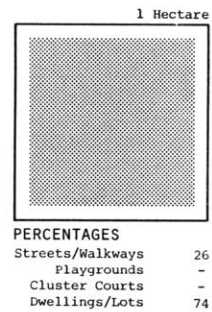
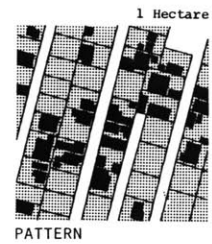


The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate



LAND UTILIZATION DIAGRAMS



LOCALITY BLOCK LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.15	26.3
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.42	73.7
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.57	100.0

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	26	0.57	45.6
DWELLING UNITS	22	0.57	38.6
PEOPLE	110	0.57	192.9

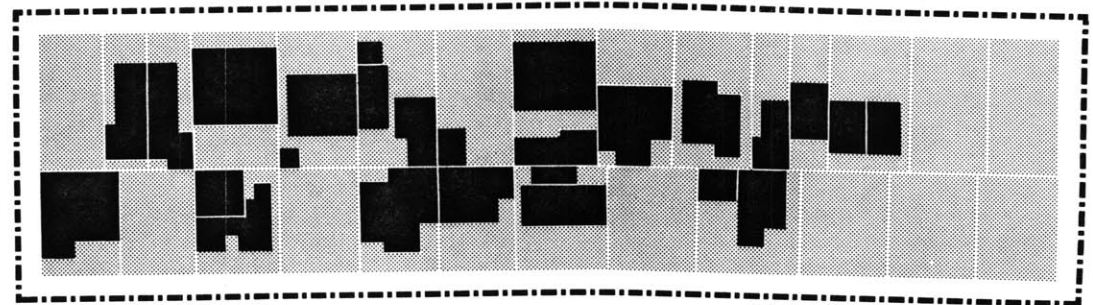
NETWORK EFFICIENCY

Network length (streets, walkways) = 310 m/Ha

Areas served (total area)

LOTS

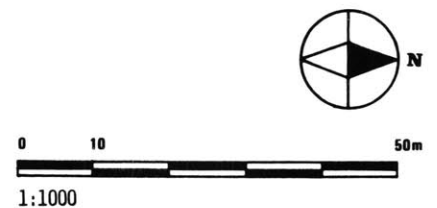
Average area, dimensions = 155 m²

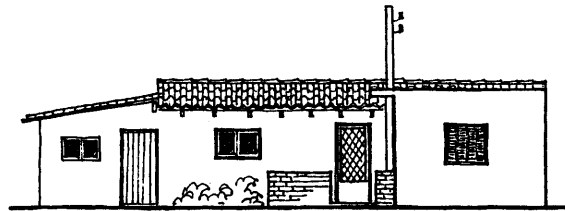


PATTERN

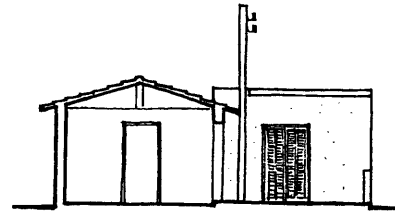
Public:	streets/walkways	
Semi-Public:	playgrounds	
Semi-Private:	cluster courts	
Private:	lots	
	dwellings	

LOCALITY BLOCK PLAN

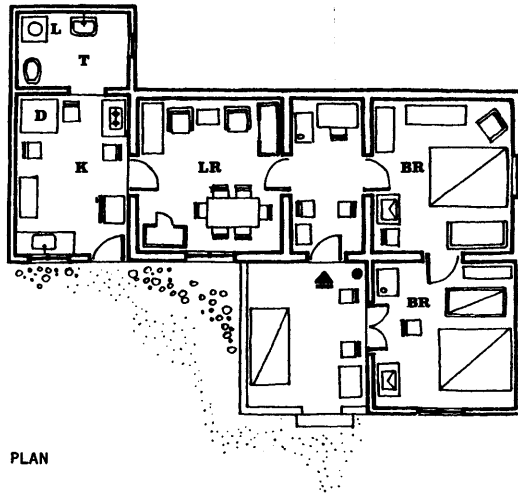




ELEVATION



SECTION

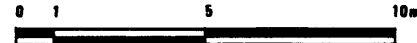


PLAN

KEY

LR Living Room
 D Dining/Eating Area
 BR Bedroom
 K Kitchen/Cooking Area
 T Toilet/Bathroom
 L Laundry

TYPICAL DWELLING



1:200



PHYSICAL DATA

(related to dwelling and land)

DWELLING UNIT
 type: HOUSE
 area (sq m): 72
 tenure: LEGAL OWNERSHIP

LAND/LOT
 utilization: PRIVATE
 area (sq m): -
 tenure: LEGAL OWNERSHIP

DWELLING
 location: PERIPHERY
 type: ROW/GROUPED
 number of floors: 1
 utilization: MULTIPLE: FAMILY
 physical state: FAIR

DWELLING DEVELOPMENT
 mode: INCREMENTAL
 developer: POPULAR
 builder: SELF HELP/SM.CONTRACTOR
 construction type: MASONRY-WOOD/CONCRETE
 year of construction: 1923, 1960

MATERIALS
 foundation: CONCRETE
 floors: CONCRETE
 walls: MASONRY/CONCRETE COLUMNS
 roof: WOOD-TILE ROOFING/CONC.

DWELLING FACILITIES
 wc: 1
 shower: -
 kitchen: 1
 rooms: 3
 other: HALL

SOCIO-ECONOMIC DATA

(related to user)

GENERAL: SOCIAL
 user's ethnic origin: GREEK
 place of birth: ATHENS,ZOFRIA
 education level: NONE

NUMBER OF USERS
 married: 4
 single: -
 children: 1
 total: 5

MIGRATION PATTERN
 number of moves: -
 rural - urban: -
 urban - urban: -
 urban - rural: -
 why came to urban area: -

GENERAL: ECONOMIC
 user's income group: MODERATELY LOW
 employment: CONSTRUCTION MATERIALS
 distance to work: -
 mode of travel: PRIVATE CAR

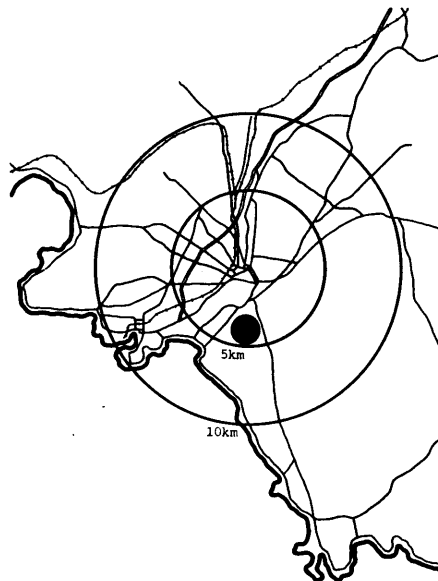
COSTS
 dwelling unit: NA
 land - market value: NA

DWELLING UNIT PAYMENTS
 financing: SELF FINANCED
 rent/mortgage: NA
 % income for rent/mortgage: NA

3

MESONISI, BRACHAMI

ILLEGAL SETTLEMENT



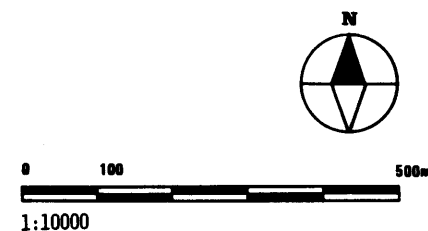
LOCATION: Mesonisi is part of the municipality of Brachami, located south of Leoforos Ag. Dimitriou which is the municipality's main circulation artery, and is surrounded by the branches of a major ravine (Rema Pikrodafnis) that carries water from Mount Hymettos to the sea.

ORIGINS: Mesonisi is one of the remaining illegal settlements in the municipality. While previously the site of a garbage dump, it was turned into a housing community after 1950 when the first low income settlers came into the area. The plots were bought between 1950 and 1965 while the construction of the houses started after 1955.



LOCALITY PLAN

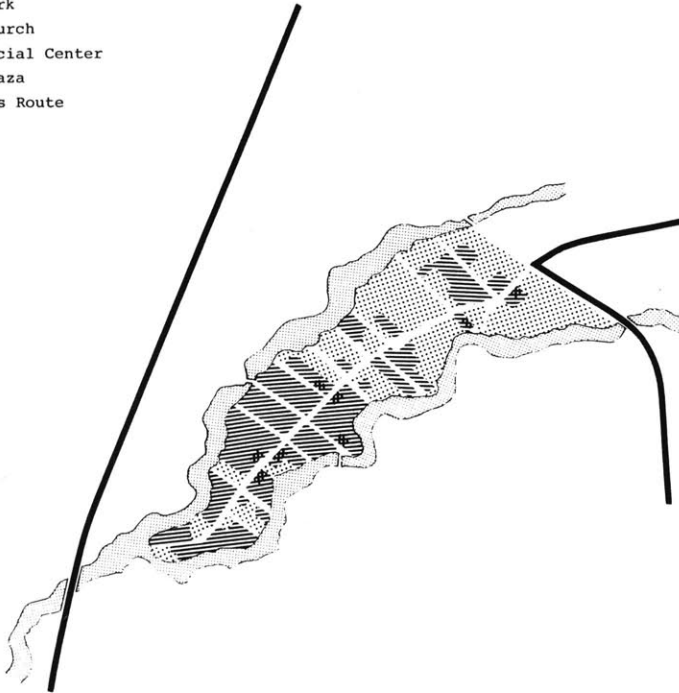
LAYOUT: The locality covers an area of approximately 14 hectares, having an average width of 140m and a length of 1km. An asphalt road (odos Dramas), crossing the land between the ravines bounds the locality on the northeast, separating it from the adjacent illegal community of Ag. Vasilios. The rest of the boundaries



of the locality are formed by the branches of the Pikrodafni ravine, isolating it from the adjacent Brachami communities. The layout of the settlement consists of short dead-end roads branching off a central road that runs through the locality originating from the asphalt road at the northeast end.

KEY

- S** School
Pg Playground
Pk Park
Ch Church
SC Social Center
P Plaza
 — Bus Route



0 100 500m
1:10000

LOCALITY LAND USE PATTERN

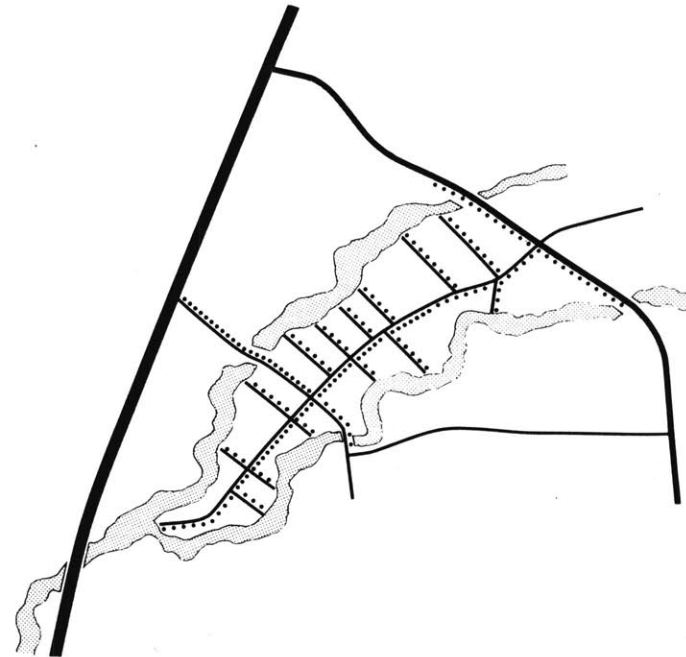
LAND USE: The area is predominantly residential. There are only three shops along the central road with limited number of local customers, as well as some small workshops and part-time services. The plots are rather small though sufficient for the single family houses. The most common plot size is 150sq.m., but a substantial number are even

smaller (112-150sq.m.). A large number of plots are still undeveloped and others are simply used for storage or playgrounds.

CIRCULATION: The access to the settlement is limited since the surrounding ravines create a physical barrier to the adjacent

KEY

- VEHICULAR
 PEDESTRIAN



0 100 500m
1:10000

LOCALITY CIRCULATION PATTERN

communities, especially during the winter when they are flooded. The main approach is from the asphalt road on the northeast end of the settlement. There is a second asphalt road that bridges over the ravines providing access from the adjacent main commercial artery. The internal circulation consists of short dead-end roads

branching off a central road that runs through the settlement originating from the asphalt road on the northeast end. Since there are no through-streets the vehicular circulation is very limited, so the streets are mainly used for pedestrian activity, children's playgrounds and outdoor life for the residents.

COMMUNITY FACILITIES: The inhabitants of the Mesonisi use the central facilities of Brachami. There is a kindergarten of the central square Brachami, 1.5km away. A primary school is located relatively close to the settlement, on the opposite side of the municipality's busy artery. The secondary school is much further away and the children have to commute there by bus. There is no public land in Mesonisi apart from the ravines which belong to the public sewerage company. The streets and the vacant lots are used for children's activities.

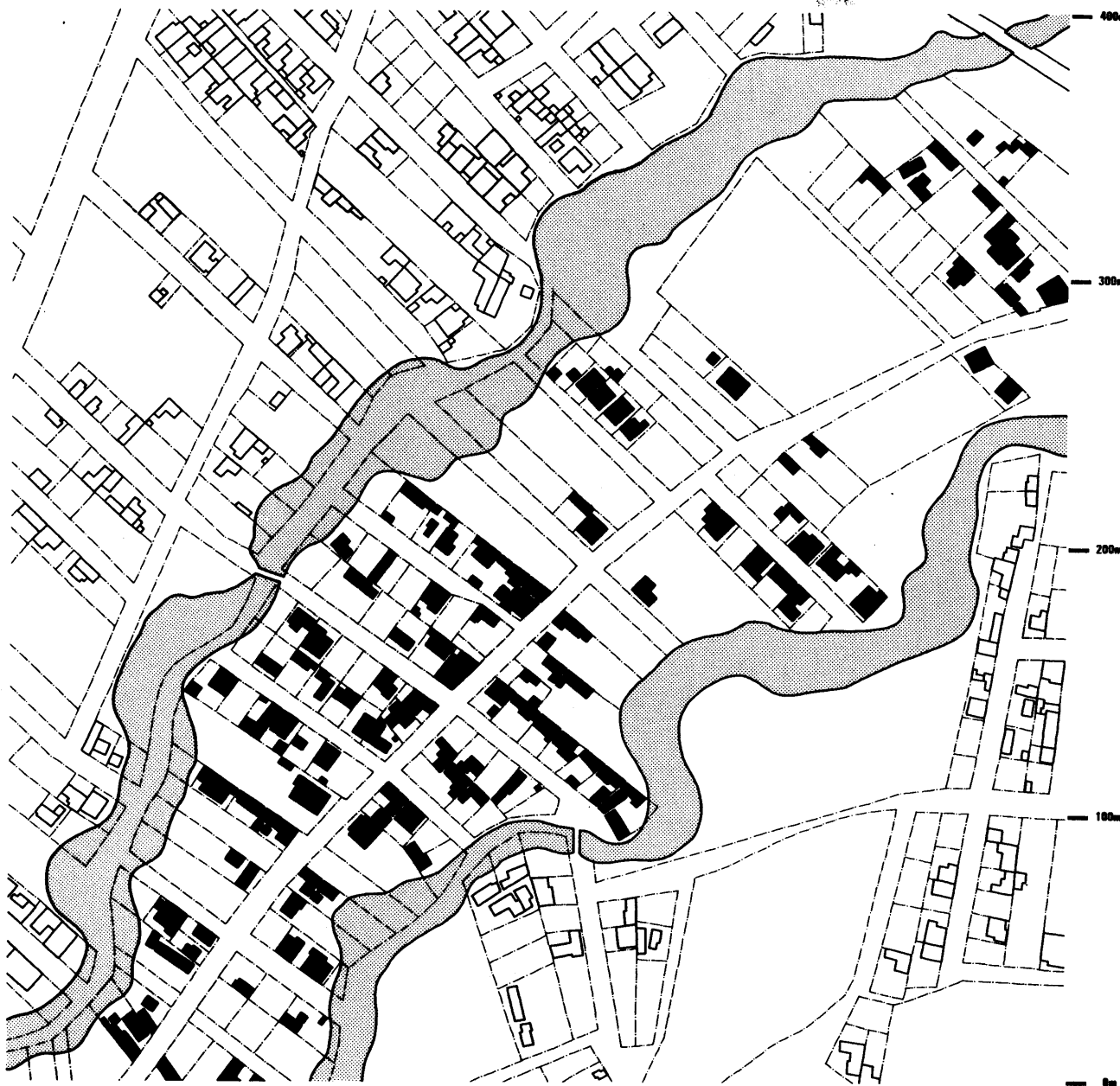
POPULATION: There are approximately 1000 people living today in Mesonisi, with an average of 4 persons/household. Approximately 25% of the families in the settlement are extended families, where three generations live together in the same plot, sometimes in the same house.

INCOME: The average monthly income for the younger households in the settlement is about 15.000 drs (\$300), which can be considered as low but it allows a living above the subsistence level considering the fact that they are living in their own houses. The income of the older people is far below the subsistence level (sometimes 1000 drs/month = \$20), so they usually live close to their children or relatives with better income.



LOCALITY SEGMENT AIR PHOTOGRAPH



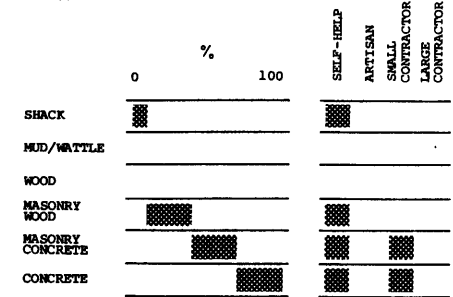


LOCALITY SEGMENT PLAN

0 50 100 150m
1:2500



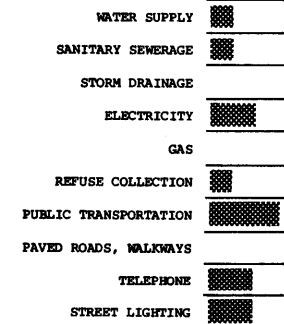
LOCALITY CONSTRUCTION TYPES



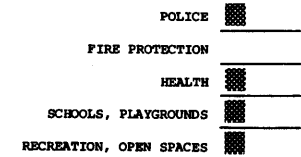
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



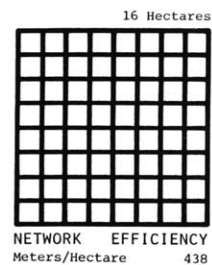
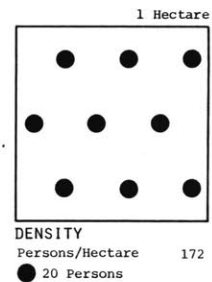
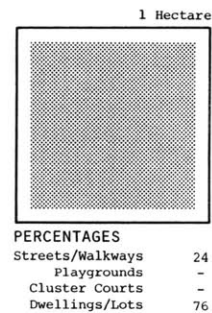
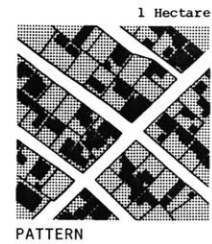
LOCALITY COMMUNITY FACILITIES



The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

LAND UTILIZATION DIAGRAMS



LOCALITY BLOCK LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.07	24.1
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.22	75.9
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.29	100.0

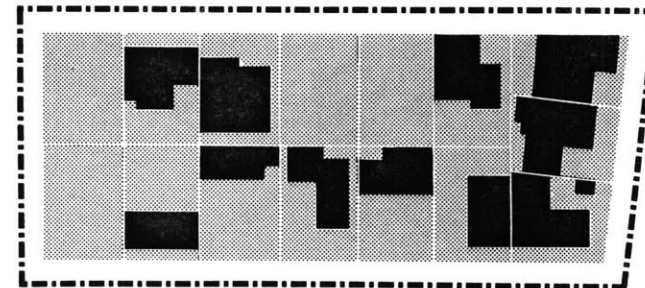
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	15	0.29	51.7
DWELLING UNITS	11	0.29	37.9
PEOPLE	50	0.29	172.4

NETWORK EFFICIENCY

Network length (streets, walkways) = 403 m/Ha
 Areas served (total area)

LOTS

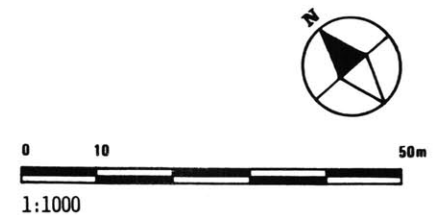
Average area, dimensions = 145 m²

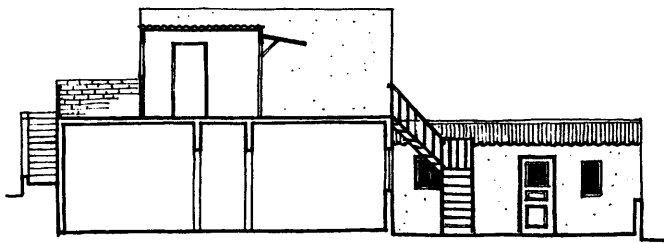


PATTERN

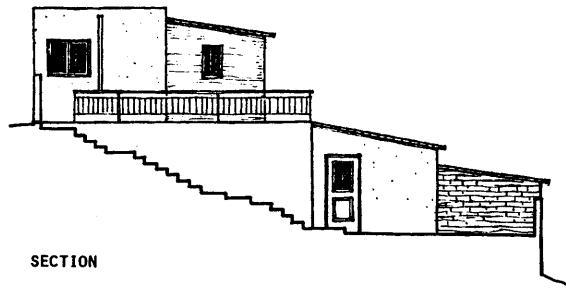
Public:	streets/walkways	
Semi-Public:	playgrounds	
Semi-Private:	cluster courts	
Private:	lots	
	dwellings	

LOCALITY BLOCK PLAN

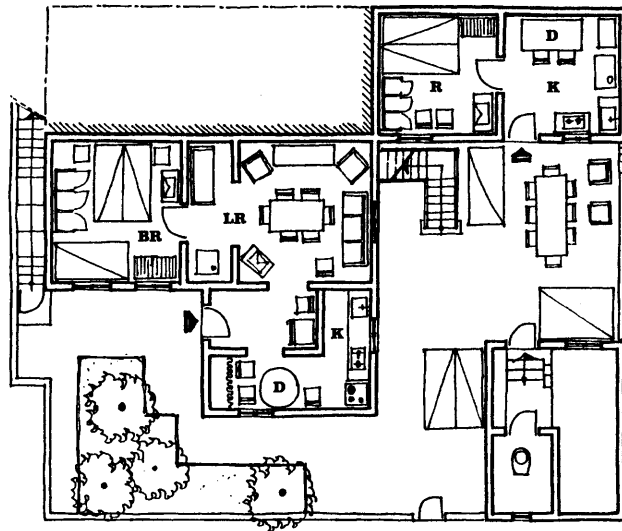




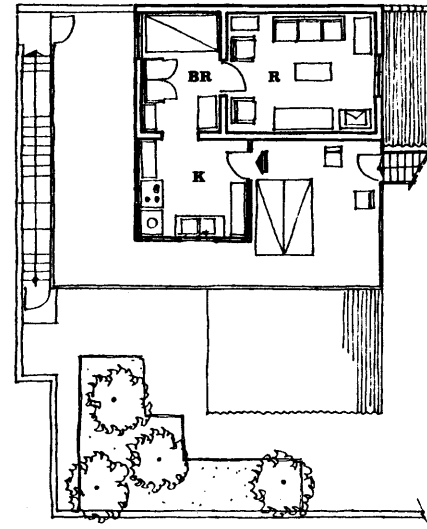
ELEVATION



SECTION



FIRST FLOOR PLAN



SECOND FLOOR PLAN

KEY

- LR Living Room
 D Dining/Eating Area
 BR Bedroom
 K Kitchen/Cooking Area
 T Toilet/Bathroom
 R Room (multi-use)

TYPICAL DWELLING

PHYSICAL DATA
 (related to dwelling and land)

DWELLING UNIT
 type: HOUSE
 area (sq m): 116
 tenure: LEGAL OWNERSHIP

LAND/LOT
 utilization: PRIVATE
 area (sq m): 195
 tenure: LEGAL OWNERSHIP

DWELLING
 location: INNER RING
 type: ROW/GROUPED
 number of floors: 2
 utilization: MULTIPLE: EXTENDED FAMILY
 physical state: FAIR

DWELLING DEVELOPMENT
 mode: INCREMENTAL
 developer: POPULAR
 builder: SELF HELP/SMALL CONTRACTOR
 construction type: MASONRY-WOOD/CONCRETE
 year of construction: 1965

MATERIALS
 foundation: CONCRETE
 floors: CONCRETE
 walls: CONCRETE BLOCK/CARDBOARD
 roof: CONCRETE/WOOD/COR.METAL

DWELLING FACILITIES
 wc: 1
 shower: -
 kitchen: 3
 rooms: 5
 other: STORAGE

SOCIO-ECONOMIC DATA
 (related to user)

GENERAL: SOCIAL
 user's ethnic origin: GREEK
 place of birth: KALAMATA
 education level: NONE

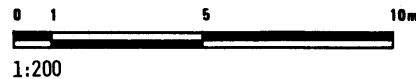
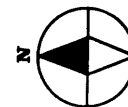
NUMBER OF USERS
 married: 6
 single: -
 children: 3
 total: 8

MIGRATION PATTERN
 number of moves: 2
 rural - urban: 1965
 urban - urban: 1965
 urban - rural: -
 why came to urban area: EMPLOYMENT

GENERAL: ECONOMIC
 user's income group: LOW
 employment: LOCAL GOVT. EMPLOYEE
 distance to work: 2 KM
 mode of travel: PUBLIC TRANSPORTATION

COSTS
 dwelling unit: NA
 land - market value: NA

DWELLING UNIT PAYMENTS
 financing: SELF FINANCED
 rent/mortgage: -
 % income for rent/mortgage: -



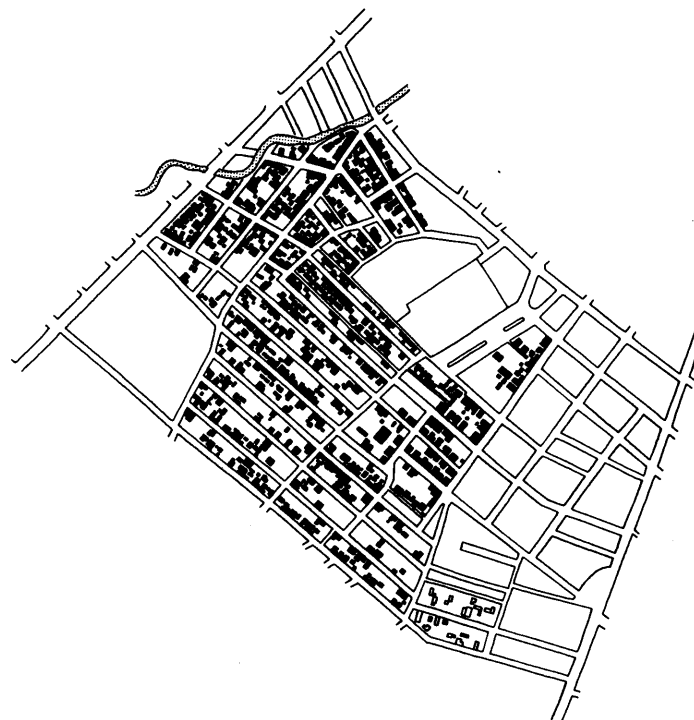
4 TAXIARCHIS, BRACHAMI

POPULAR SETTLEMENT



LOCATION: Taxiarchis lies in the northwest end of the municipality of Brachami, west of Leoforos Agiou Dimitriou, the municipality's main artery, and adjacent to the municipality of Nea Smirni.

ORIGINS: The area was originally part of the agricultural land of the Brachami area. It was subdivided into plots after 1950 when the first migrants came into the area. In 1954 there were only a few shanties in the settlement. The construction of houses started only after 1958 when most of the present inhabitants of the locality settled there. Though already subdivided and partially built-up, the area remained outside of the town map until 1972, when a town plan and planning by-laws were imposed on the area.



1:10000

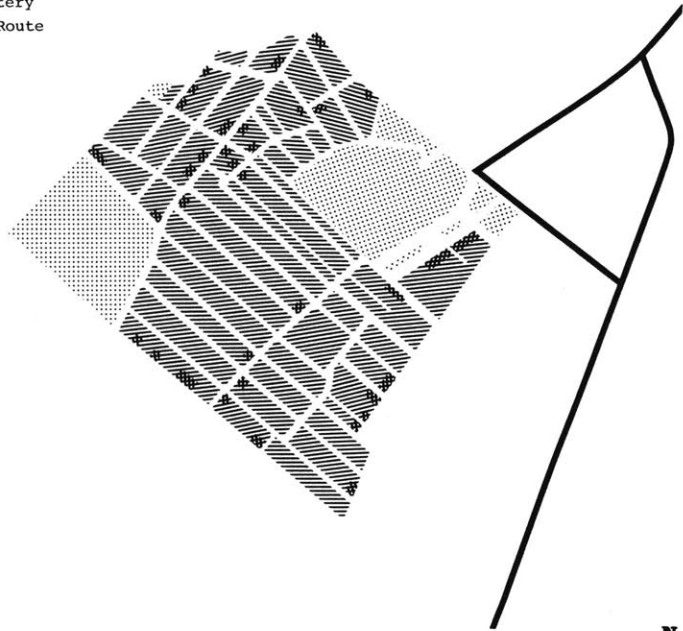
LOCALITY PLAN

LAYOUT: The boundaries of the locality are formed by the ravine of Kalogiron and by the Efxinou Pontou Road on the northwest, by the 25th-of-March Road on the northeast, by the Kalifrona Road on the southeast and by the Ag. Saranta Road on the southwest. The layout of the locality reflects the way it originated by the subdivision of

different agricultural land properties into plots. The boundary lines of the properties seem to be the decisive factor for the layout and there is a consistency of land subdivision only within the limits of each original property. There are long narrow blocks, with one row of plots, large square blocks with three rows of plots and access

KEY

- S** School
Pg Playground
Pk Park
Ch Church
SC Social Center
P Plaza
C Cemetery
— Bus Route



AREAS

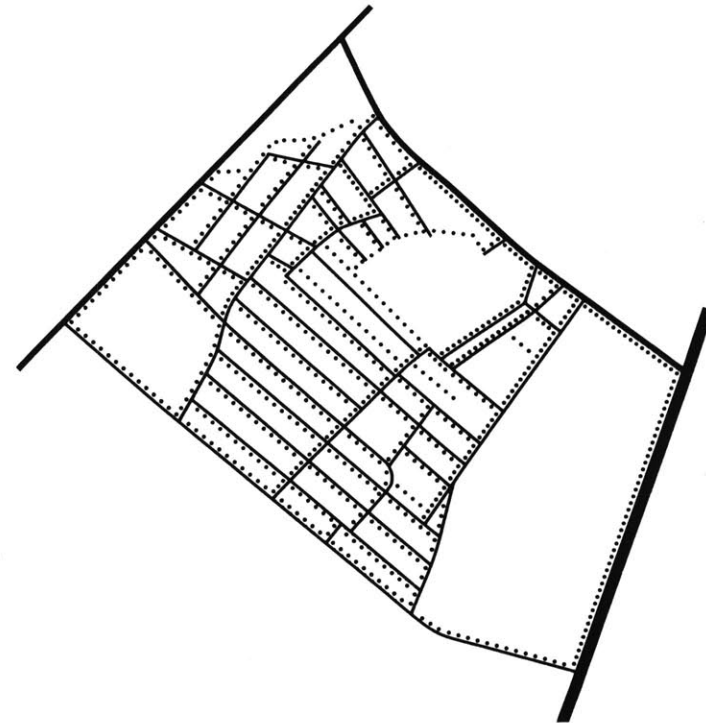
- RESIDENTIAL**
COMMERCIAL
INDUSTRIAL
OPEN SPACES



LOCALITY LAND USE PATTERN

KEY

- VEHICULAR
..... PEDESTRIAN



LOCALITY CIRCULATION PATTERN

alleys, and larger square blocks with houses built around a shared central space. Most of the lots are small, the most common size being 120-150 sq.m.

LAND USE: The area is low density residential with many open spaces due to undeveloped lots. There is no specific concentration

of commercial activity, but many shops, workshops and services are scattered throughout the locality. The cemeteries of Brachami and Dafni occupy large areas of the settlement. These have become a health hazard due to improper sanitary precautions and the inhabitants have requested that they be relocated.

CIRCULATION: The primary approach to the locality is either by way of the 25-of-March Road or the Anapafseos Road on the northwest, both of which provide access to the main commercial artery and the central square of the municipality. A series of secondary streets provide access to the locality from the main artery.

The street network is the result of the way the area was developed from the original agricultural properties. The streets were formed to best suit each individual property, resulting in an inefficient circulation network for the locality. A few streets are relatively wide and asphalt paved, while the majority are narrow earth roads.

COMMUNITY FACILITIES: There are two small community green areas in front of the cemetery and two community playgrounds, one near the cemetery and one in a vacant lot at the north end of the area. Apart from these, several undeveloped areas serve as open spaces and playgrounds. Although there are no schools in the settlement, a primary school in an adjacent area is within easy walking distance. The secondary school is located further away and the children commute there by bus. A large vacant piece of land on the northwest of the locality has been reserved for school facilities, but the municipality does not have the money to buy and develop the land.

INCOME: The average monthly income for most of the households ranges between 12,000-20,000 drs (\$240-\$400).



LOCALITY SEGMENT AIR PHOTOGRAPH



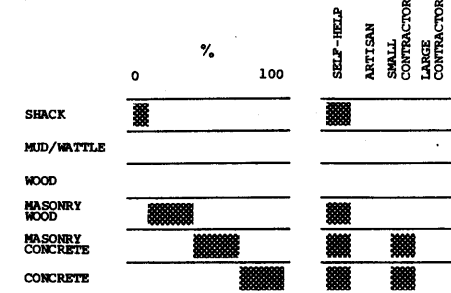


LOCALITY SEGMENT PLAN

0 50 100 150m
1:2500



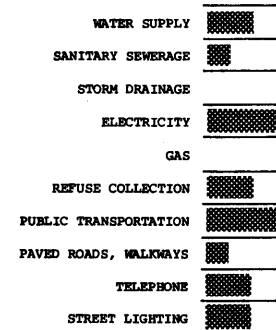
LOCALITY CONSTRUCTION TYPES



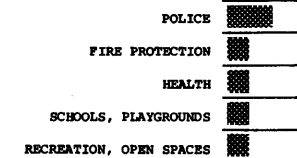
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



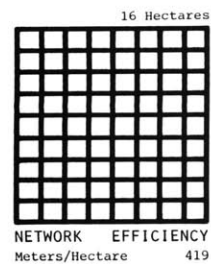
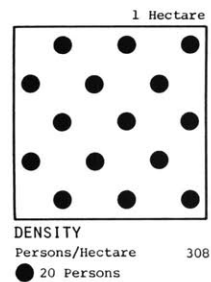
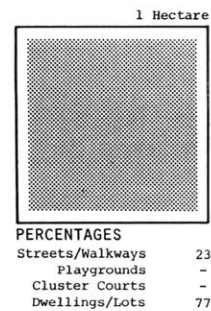
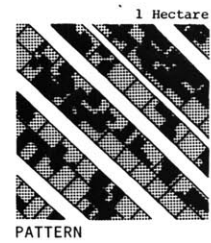
LOCALITY COMMUNITY FACILITIES



The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

LAND UTILIZATION DIAGRAMS



LOCALITY BLOCK LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.12	23.1
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.40	76.9
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.52	100.0

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	30	0.52	57.7
DWELLING UNITS	26	0.52	50.0
PEOPLE	160	0.52	307.7

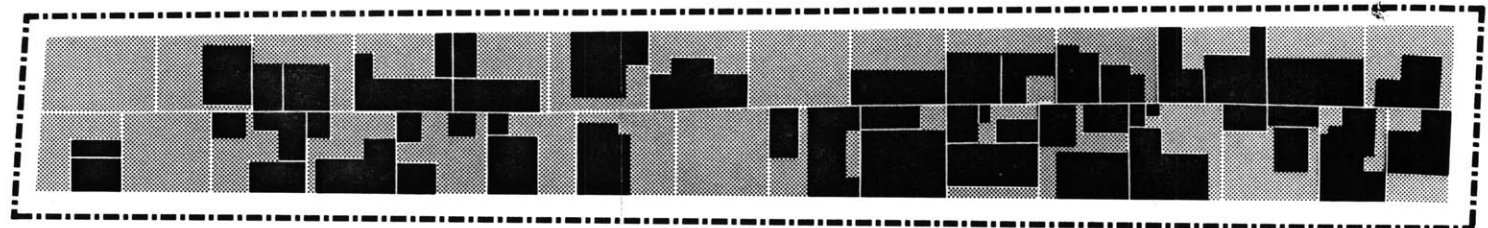
NETWORK EFFICIENCY

Network length (streets, walkways) = 419 m/Ha

Areas served (total area)

LOTS

Average area, dimensions = 120 m²

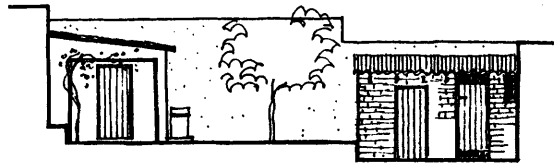


PATTERN

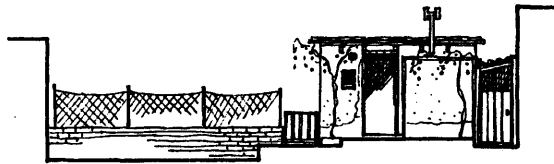
Public:	streets/walkways	
Semi-Public:	playgrounds	
Semi-Private:	cluster courts	
Private:	lots	
	dwellings	

LOCALITY BLOCK PLAN

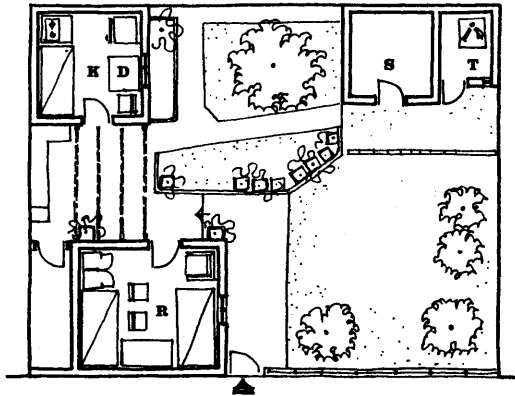




SECTION



SECTION



PLAN

KEY

- R Room (multi-use)
- D Dining/Eating Area
- K Kitchen/Cooking Area
- T Toilet/Bathroom
- S Storage



TYPICAL DWELLING

1:200

PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT	
type:	HOUSE
area (sq m):	32
tenure:	LEGAL OWNERSHIP
LAND/LOT	
utilization:	PRIVATE
area (sq m):	114
tenure:	LEGAL OWNERSHIP
DWELLING	
location:	INNER RING
type:	ROW/GROUPED
number of floors:	1
utilization:	SINGLE: INDIVIDUAL
physical state:	FAIR
DWELLING DEVELOPMENT	
mode:	INCREMENTAL
developer:	POPULAR
builder:	SELF HELP
construction type:	MASONRY/WOOD
year of construction:	1958
MATERIALS	
foundation:	CONCRETE
floors:	CONCRETE
walls:	CONCRETE BLOCK
roof:	WOOD/SLATE/COR.METAL
DWELLING FACILITIES	
wc:	1
shower:	-
kitchen:	1
rooms:	1
other:	STORAGE

SOCIO-ECONOMIC DATA (related to user)

GENERAL: SOCIAL	
user's ethnic origin:	GREEK
place of birth:	MITILINI
education level:	NONE
NUMBER OF USERS	
married:	-
single:	1
children:	-
total:	1
MIGRATION PATTERN	
number of moves:	1
rural - urban:	1958
urban - urban:	-
urban - rural:	-
why came to urban area:	EMPLOYMENT
GENERAL: ECONOMIC	
user's income group:	VERY LOW
employment:	WELFARE
distance to work:	-
mode of travel:	PUBLIC
COSTS	
dwelling unit:	NA
land - market value:	NA
DWELLING UNIT PAYMENTS	
financing:	SELF FINANCED
rent/mortgage:	NA
% income for rent/mortgage:	NA

5

ANTHEON, BRACHAMI

POPULAR SETTLEMENT



LOCATION: The locality is part of the municipality of Brachami. It is located in the eastern area of the municipality adjacent to Leoforos Vouliagmenis, a major Athens artery which forms the east border of Brachami.

ORIGINS: The original farming land of the area was subdivided and sold out as plots around 1948. The settlers were migrants to the city of Athens buying plots outside of the town map for low prices and building there illegally. The locality was included into the town map in 1959 when the inhabitants themselves hired an engineer to survey the existing land subdivision of the area and pressure was imposed by the local council on the municipality authorities. By then almost 3/4 of the plots in the area were partially built up.



0 100 500m
1:10000

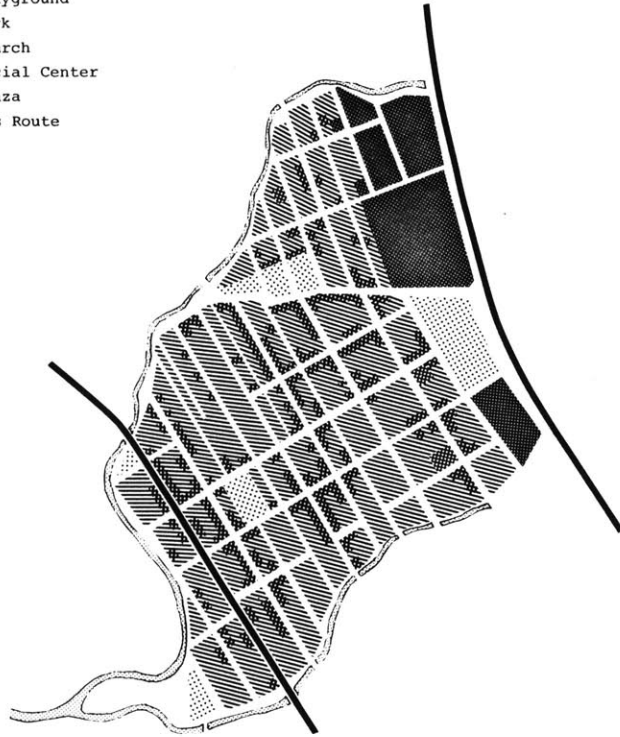
LOCALITY PLAN

LAYOUT: The northeastern boundary of the locality is formed by Leoforos Vouliagmenis, one of the major arteries of the city of Athens. The rest of the locality boundaries are formed by shallow branches of the Pikrodafni ravine. Several streets cross over the ravine connecting the settlement with the adjacent communities.

The layout is based on a clearly defined girdiron system but because it was imposed on the previously existing illegal settlement, many awkward conditions resulted, such as extremely long blocks or blocks with three rows of blocks subdivided by access alleys. Most of the lots are very small, the most common size being 120 sq.m.

KEY

- S** School
Pg Playground
Pk Park
Ch Church
SC Social Center
P Plaza
 Bus Route



AREAS

-  RESIDENTIAL
 COMMERCIAL
 INDUSTRIAL
 OPEN SPACES



LOCALITY LAND USE PATTERN

LAND USE: There is a concentration of light industries on the east side of the locality, along the busy artery of Leoforos Vouliagmenis, while a few more are scattered in the northeastern part. There are many shops along the streets throughout the locality with a greater density on certain streets and crossroads, but without concen-

tration on any specific one. The settlement is densely built up with very few left over vacant lots.

CIRCULATION: The access to the locality is limited because of the ravines surrounding the area on three sides and the major artery on its fourth side. The main approach is

KEY

-  VEHICULAR
 PEDESTRIAN



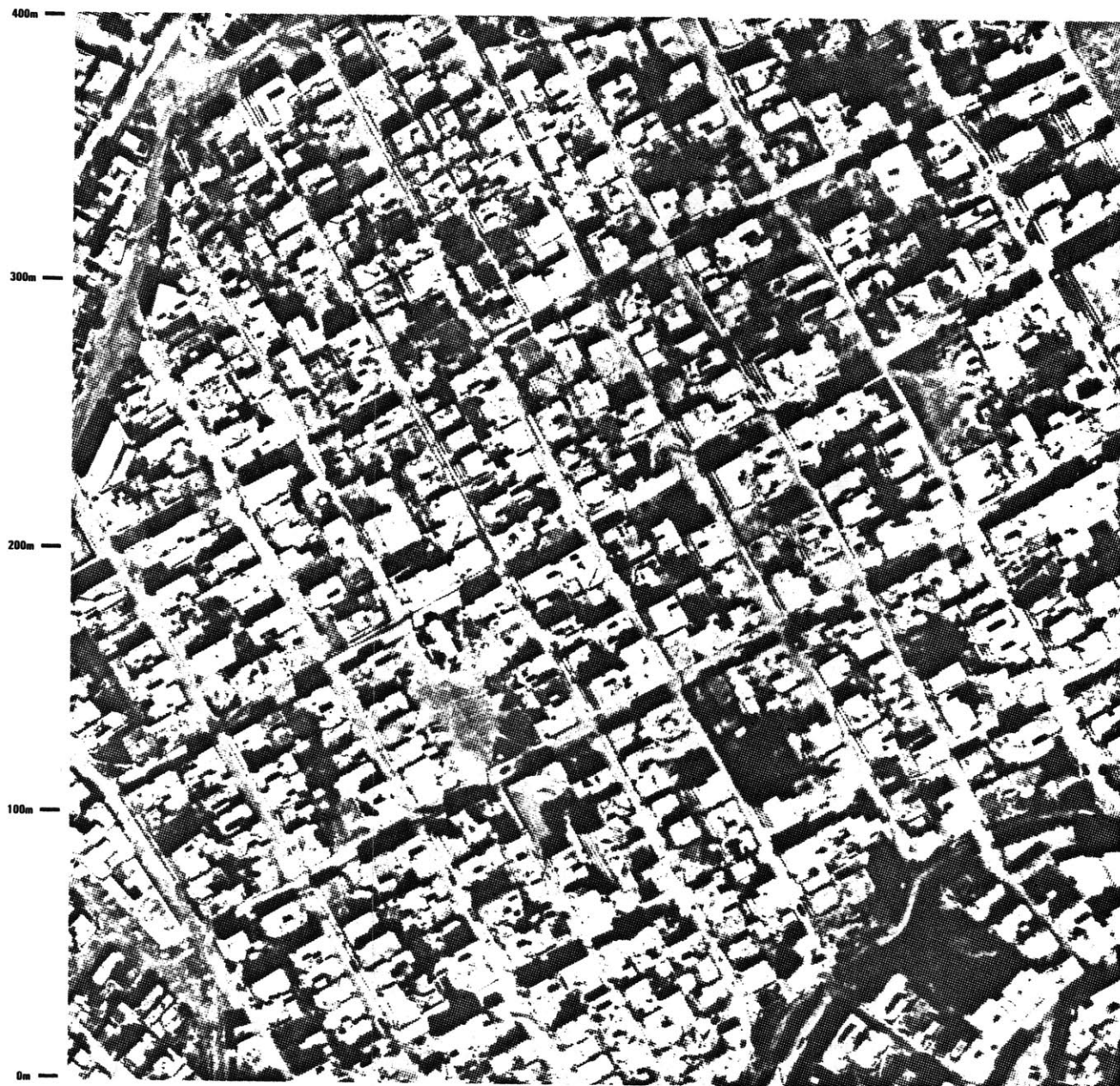
LOCALITY CIRCULATION PATTERN

by the V.Alexandrou Road, which connects the locality to the Brachami center and by the Venizelou Road which provides access both from the municipality and from the major artery of Leoforos Vouliagmenis. There is a tight network of residential streets imposed on the settlement, lacking hierarchy and leaving many dead-end streets at

the ravines which are to accommodate future roads. There is also a number of walkways subdividing the blocks, providing access to the lots that have no access from the main streets. While the majority of the streets are asphalt paved, there is still a large number of earth roads along the ravines on the periphery of the settlement.

COMMUNITY FACILITIES: There are no schools in the locality except for a kindergarten in a rented building. The primary school and the secondary school, located in adjacent areas, are within easy walking distance from the locality. There are two community playgrounds, one at the north end and one at the east end, along with a small public park that is currently being developed. Two open areas have been reserved for community plazas but they are still undeveloped.

INCOME: The average monthly income for most of the households ranges between 12,000-20,000 drs (\$240-\$400).

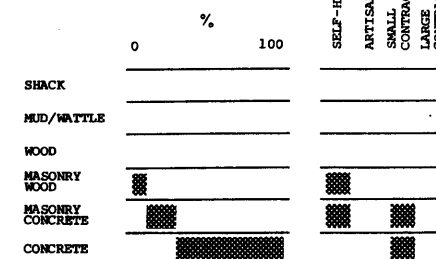


LOCALITY SEGMENT AIR PHOTOGRAPH





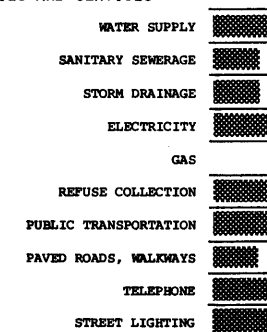
LOCALITY CONSTRUCTION TYPES



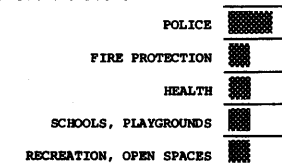
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



LOCALITY COMMUNITY FACILITIES



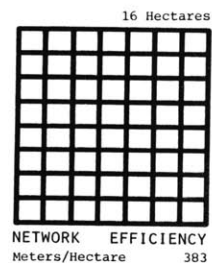
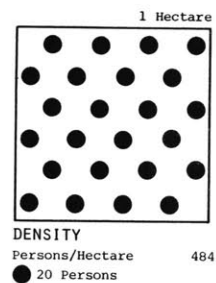
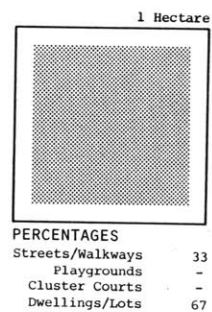
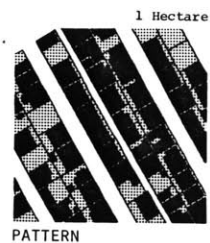
The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

LOCALITY SEGMENT PLAN



LAND UTILIZATION DIAGRAMS



LOCALITY BLOCK LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.21	32.8
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.43	67.2
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.64	100.0

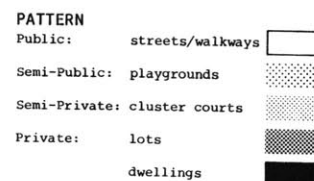
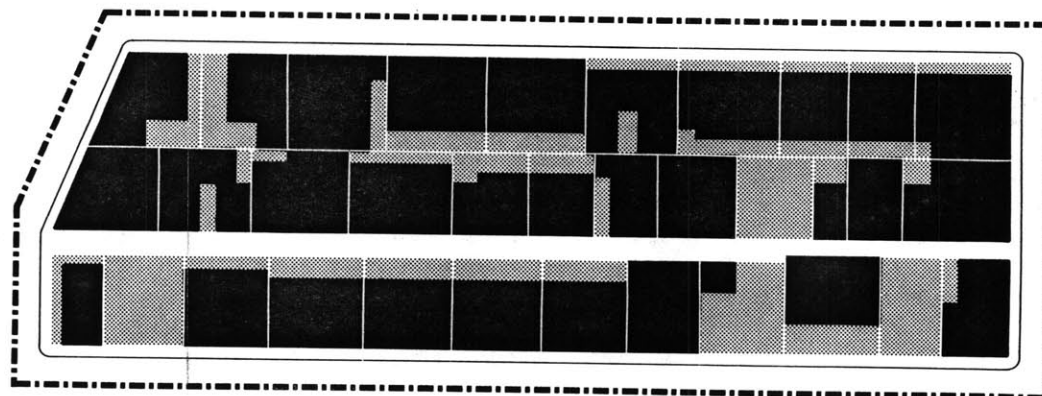
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	33	0.64	51.6
DWELLING UNITS	90	0.64	150.6
PEOPLE	310	0.64	484.4

NETWORK EFFICIENCY

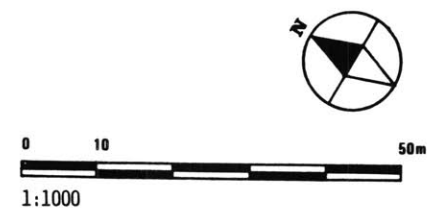
Network length (streets, walkways) / Areas served (total area) = 383 m/Ha

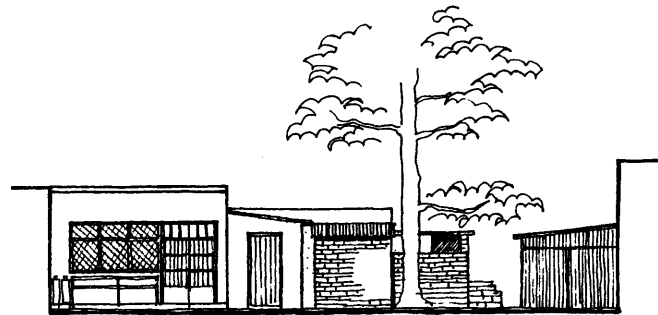
LOTS

Average area, dimensions = 145 m²



LOCALITY BLOCK PLAN

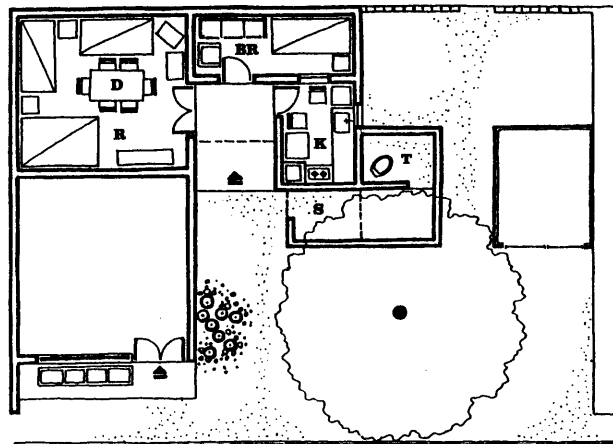




ELEVATION



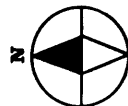
SECTION



PLAN

KEY

- R Room (multi-use)
- D Dining/Eating Area
- BR Bedroom
- K Kitchen/Cooking Area
- T Toilet/Bathroom
- S Storage



0 1 5 10m

TYPICAL DWELLING

1:200

PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT
 type: HOUSE
 area (sq m): 34
 tenure: LEGAL OWNERSHIP

LAND/LOT
 utilization: PRIVATE
 area (sq m): 150
 tenure: LEGAL OWNERSHIP

DWELLING
 location: INNER RING
 type: ROW/GROUPED
 number of floors: 1
 utilization: SINGLE: FAMILY
 physical state: FAIR

DWELLING DEVELOPMENT
 mode: INCREMENTAL
 developer: POPULAR
 builder: SELF-HELP/SM.CONTRACTOR
 construction type: MASONRY-WOOD/CONCRETE
 year of construction: 1950, 1964

MATERIALS
 foundation: CONCRETE
 floors: CONCRETE
 walls: MASONRY
 roof: WOOD-TILE/CONCRETE

DWELLING FACILITIES
 wc: 1
 shower: -
 kitchen: 1
 rooms: 2
 other: SHOP

SOCIO-ECONOMIC DATA (related to user)

GENERAL: SOCIAL
 user's ethnic origin: GREEK
 place of birth: THRACE
 education level: NONE

NUMBER OF USERS
 married: 2
 single: -
 children: -
 total: 2

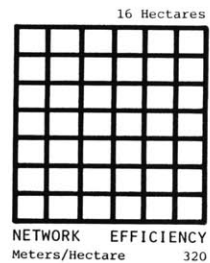
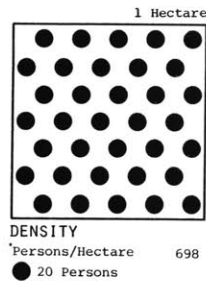
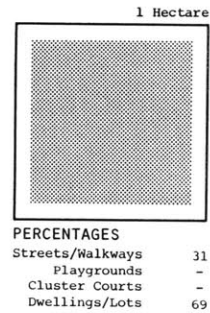
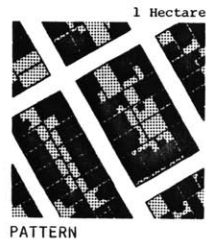
MIGRATION PATTERN
 number of moves: 2
 rural - urban: 1948
 urban - urban: 1949
 urban - rural: -
 why came to urban area: EMPLOYMENT

GENERAL: ECONOMIC
 user's income group: LOW
 employment: GROCER
 distance to work: -
 mode of travel: PUBLIC

COSTS
 dwelling unit: NA
 land - market value: NA

DWELLING UNIT PAYMENTS
 financing: SELF FINANCED
 rent/mortgage: NA
 % income for rent/mortgage: NA

LAND UTILIZATION DIAGRAMS



LOCALITY BLOCK LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.15	30.6
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.34	69.4
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.49	100.0

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	24	0.49	48.9
DWELLING UNITS	108	0.49	220.4
PEOPLE	342	0.49	697.9

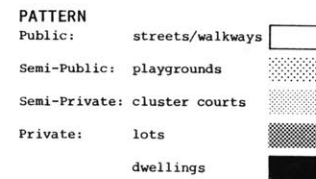
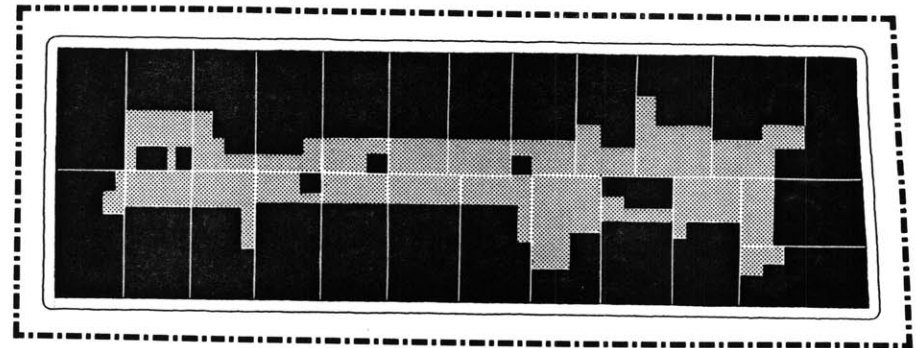
NETWORK EFFICIENCY

Network length (streets, walkways) = 320 m/Ha

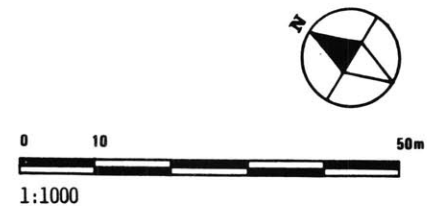
Areas served (total area)

LOTS

Average area, dimensions = 145 m²



LOCALITY BLOCK PLAN

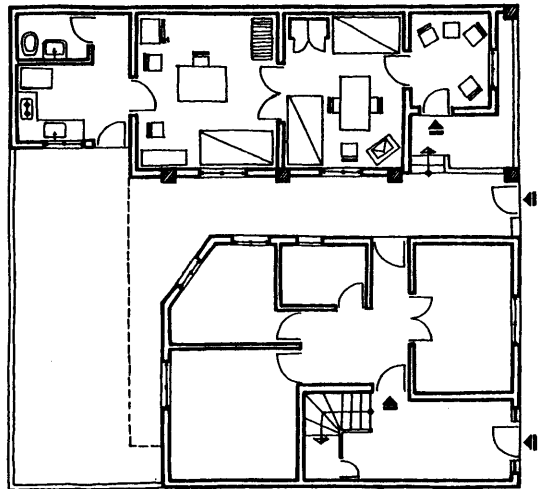




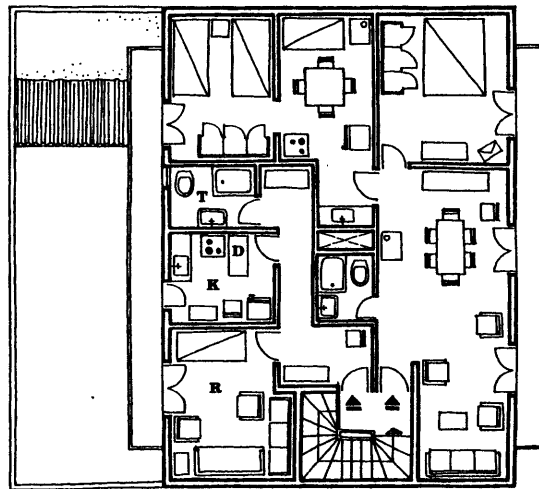
SECTION



ELEVATION



FIRST FLOOR PLAN



SECOND FLOOR PLAN

KEY

- LR Living Room
 D Dining/Eating Area
 BR Bedroom
 K Kitchen/Cooking Area
 T Toilet/Bathroom
 R Room (multi-use)

TYPICAL DWELLING

PHYSICAL DATA
 (related to dwelling and land)

DWELLING UNIT
 type: APARTMENT
 area (sq m): 34
 tenure: LEGAL RENTAL

LAND/LOT
 utilization: -
 area (sq m): -
 tenure: -

DWELLING
 location: INNER RING
 type: ROW/GROUPED
 number of floors: 2
 utilization: SINGLE: FAMILY
 physical state: GOOD

DWELLING DEVELOPMENT
 mode: INCREMENTAL
 developer: POPULAR
 builder: SMALL CONTRACTOR
 construction type: CONCRETE
 year of construction: 1954, 1960

MATERIALS
 foundation: CONCRETE
 floors: CONCRETE
 walls: MASONRY-CONC. COLS.
 roof: CONCRETE

DWELLING FACILITIES
 wc: 1
 shower: 1
 kitchen: 1
 rooms: 1
 other: HALL

SOCIO-ECONOMIC DATA
 (related to user)

GENERAL: SOCIAL
 user's ethnic origin: GREEK
 place of birth: VOLOS, THESALIA
 education level: NONE

NUMBER OF USERS
 married: -
 single: 1
 children: 1
 total: 2

MIGRATION PATTERN
 number of moves: 2
 rural - urban: 1969
 urban - urban: 1971
 urban - rural: -
 why came to urban area: EMPLOYMENT

GENERAL: ECONOMIC
 user's income group: LOW
 employment: FACTORY WORKER
 distance to work: 1 KM
 mode of travel: PUBLIC

COSTS
 dwelling unit: NA
 land - market value: NA

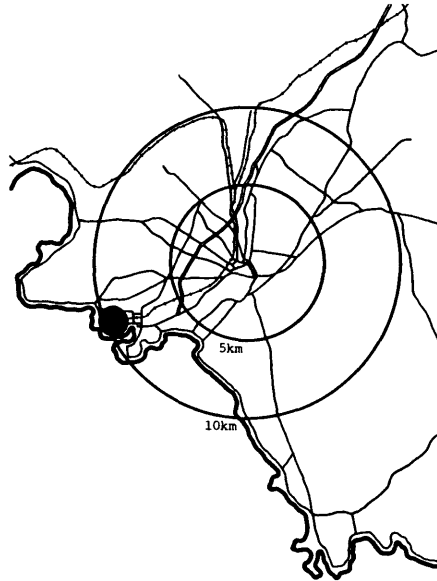
DWELLING UNIT PAYMENTS
 financing: -
 rent/mortgage: \$66
 % income for rent/mortgage: NA



1:200

7 DRAPETSONA

PUBLIC HOUSING



LOCATION: The settlement occupies the southeastern part of Drapetsona municipality located in the western area of the Athens basin, approximately 10.5km from the Athens city center and 2.3km from the Piraeus city center. The settlement has an area of 15 Ha, about 10.48% of the total area of the municipality.

ORIGINS: The settlement was developed within the framework of the program for the upgrading of the area from the refugee shanties, which resulted from the settlement of 30,000 refugees in 1924. The government's refugee resettlement program began 40 years after the initial refugee settlement, with apartment buildings built by the government after the demolition of the shanties. This started on a limited scale in 1963, but massive demolition of the remaining shanties in 1967 allowed for a gradual completion of the program. This happened in spite of the request of the refugees for self-help housing permission, in the lots occupied by the shanties.



0 100 500m
1:10000

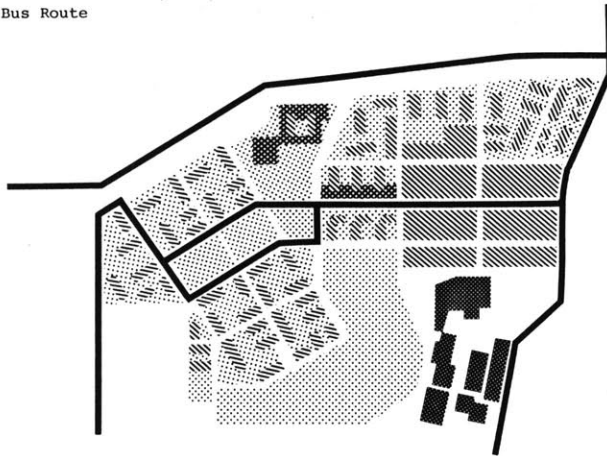
LOCALITY PLAN

LAYOUT: The settlement is bounded by the Piraeus commercial port on the south and by the port railroad on the east. There are no boundaries on the north and west, making the settlement a physical continuation of the rest of the municipality on those sides. However, the general layout of the settlement and the scale of its buildings create

a radical opposition to the surrounding area of narrow streets and low old buildings. There is a total number of 301 buildings in the settlement consisting of two-storey row houses, four-storey walk-ups and seven, eight and ten-storey apartment buildings with a total number of 1875 dwelling units.

KEY

- S** School
Pg Playground
Pk Park
Ch Church
SC Social Center
P Plaza
 — Bus Route



AREAS

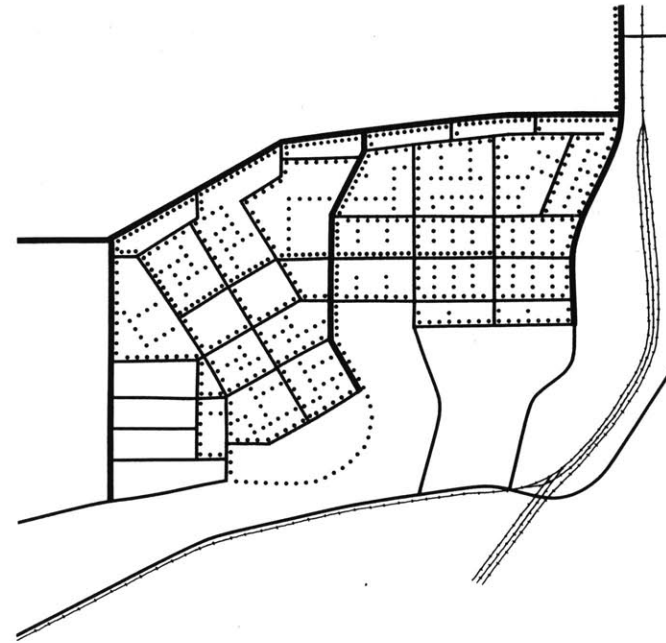
- RESIDENTIAL
 COMMERCIAL
 INDUSTRIAL
 OPEN SPACES

LOCALITY LAND USE PATTERN



KEY

- VEHICULAR
 PEDESTRIAN



LOCALITY CIRCULATION PATTERN



LAND USE: The settlement encompasses a total area of approximately 15 hectares, the lots occupying 57.5% of the area, the commercial center and community center 7.5%, the circulation 23.0% and the open spaces and green areas 12.0%. There are two commercial centers, one at the north

end and one at the center of the settlement, with government-owned shops which are rented to local businessmen. These shops are meant to serve the settlement inhabitants exclusively. However many of them are vacant since most of the residents do their shopping outside the settlement.

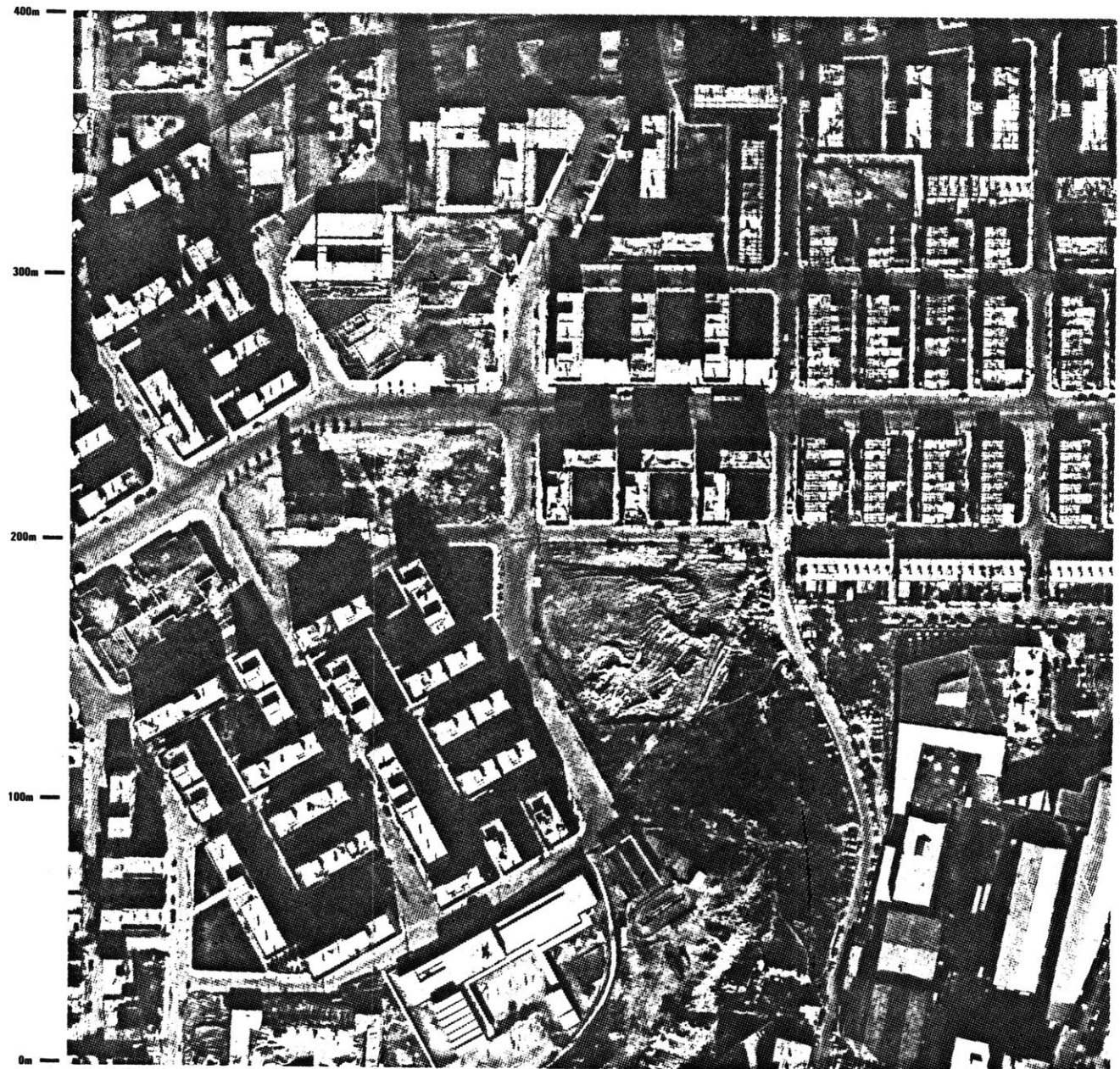
CIRCULATION: The primary approach to the settlement is by way of the northeastern road which connects the area to the adjacent Piraeus city center. The road bounding the settlement along its north side serves as a collector artery for the settlement and the adjacent part of the

municipality. The internal circulation of the settlement is designed as predominantly vehicular with wide paved streets, oversized for the amount of traffic they accommodate. Pedestrian circulation consists of well-defined paved paths within the blocks, providing access to the individual buildings.

COMMUNITY FACILITIES: Presently the only community facilities in the settlement are: a community center, a church and a playground. Beyond these, Drapetsona has not yet been fully developed in terms of community facilities and public spaces. A city hall will be built in the area behind the church. Two primary schools and one secondary school will be built in an area of 1Ha in the eastern end of the settlement. The open spaces in front of the church and the commercial center will be developed as plazas and parks with government funding. Two bus lines, one at the north end and one through the center of the settlement provide public transportation to the adjacent Piraeus city center.

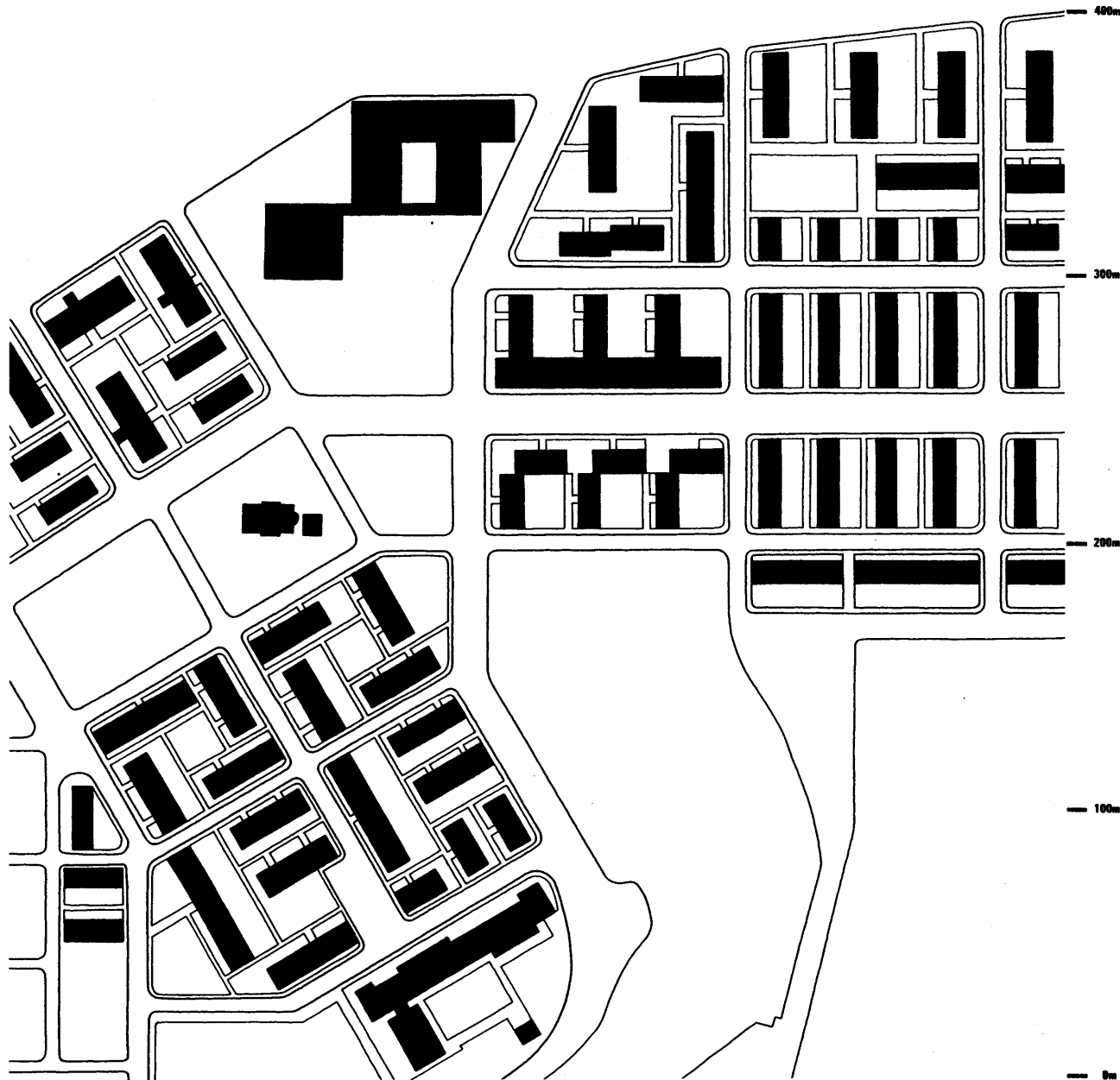
POPULATION: The population of the settlement is approximately 7500, which represents half of the overall municipality. Only 80% of the present inhabitants lived in the shanty settlement before its demolition. The remaining 20% came from nearby low income settlements.

INCOME: The average household income of 68% of the population is at subsistence level, while only 18.6% have an income a little above subsistence level and 14% are well above subsistence level.



LOCALITY SEGMENT AIR PHOTOGRAPH





LOCALITY CONSTRUCTION TYPES

	0	%	100	SELF-HELP	ARTISAN	SMALL CONTRACTOR	LARGE CONTRACTOR
SHACK							
MUD/WATTLE							
WOOD							
MASONRY WOOD							
MASONRY CONCRETE							
CONCRETE							

The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES

WATER SUPPLY	
SANITARY SEWERAGE	
STORM DRAINAGE	
ELECTRICITY	
GAS	
REFUSE COLLECTION	
PUBLIC TRANSPORTATION	
PAVED ROADS, WALKWAYS	
TELEPHONE	
STREET LIGHTING	

LOCALITY COMMUNITY FACILITIES

POLICE	
FIRE PROTECTION	
HEALTH	
SCHOOLS, PLAYGROUNDS	
RECREATION, OPEN SPACES	

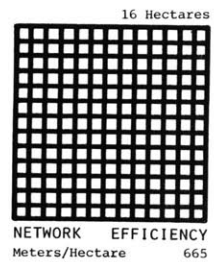
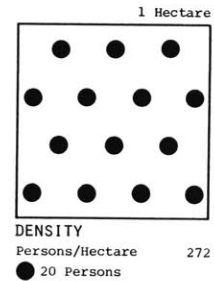
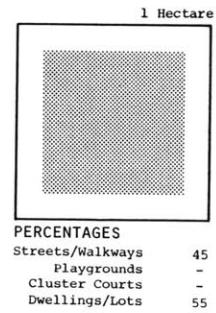
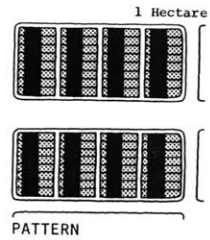
The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

LOCALITY SEGMENT PLAN



LAND UTILIZATION DIAGRAMS



LOCALITY BLOCK LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.21	44.7
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.26	55.3
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.47	100.0

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	32	0.47	68.1
DWELLING UNITS	32	0.47	68.1
PEOPLE	128	0.47	272.3

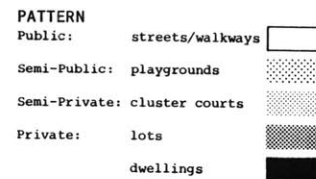
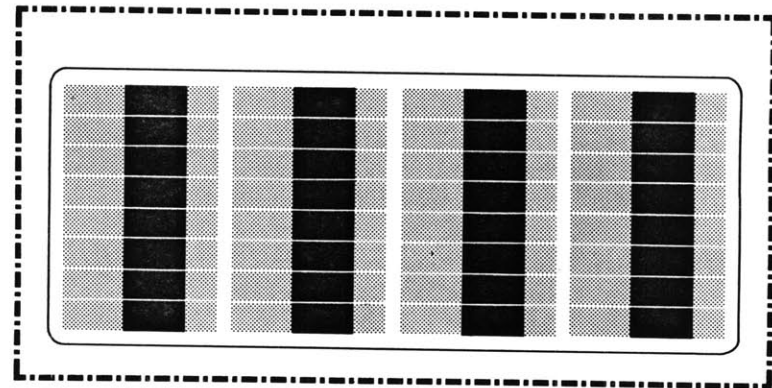
NETWORK EFFICIENCY

Network length (streets, walkways) = 330 m/Ha

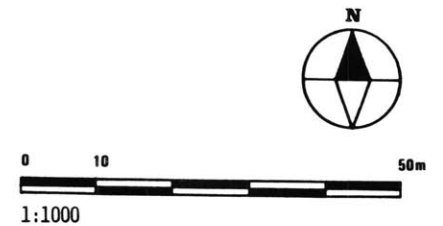
Areas served (total area)

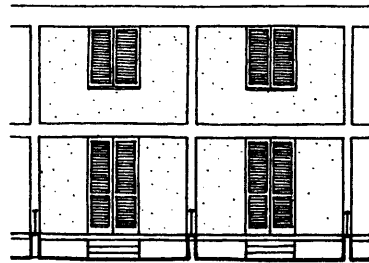
LOTS

Average area, dimensions = 80 m²

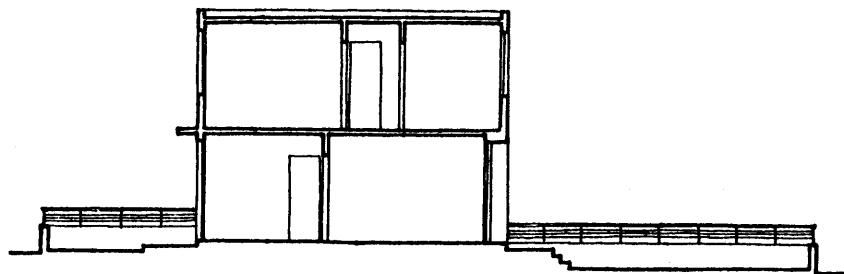


LOCALITY BLOCK PLAN

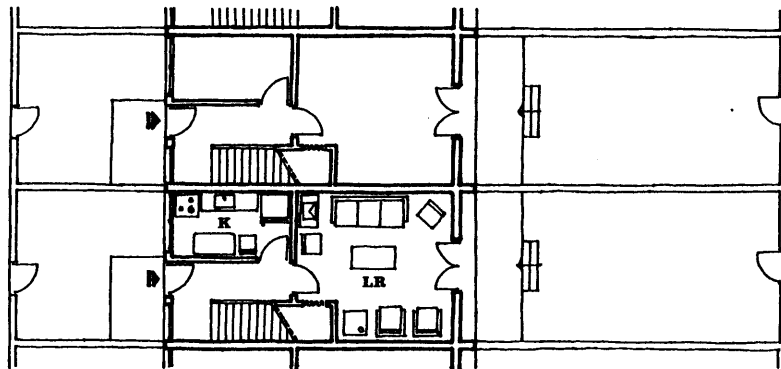




ELEVATION



SECTION

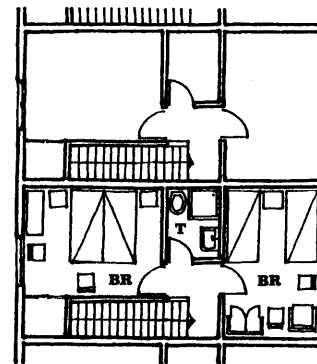


PLAN

KEY

- LR Living Room
D Dining/Eating Area
BR Bedroom
K Kitchen/Cooking Area
T Toilet/Bathroom

TYPICAL DWELLING



1:200

PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT
type: APARTMENT
area (sq m): 54
tenure: LEGAL OWNERSHIP

LAND/LOT
utilization: PRIVATE
area (sq m): -
tenure: LEGAL OWNERSHIP

DWELLING
location: PERIPHERY
type: ROW/GROUPED
number of floors: 2
utilization: SINGLE/FAMILY
physical state: GOOD

DWELLING DEVELOPMENT
mode: INSTANT
developer: PUBLIC
builder: LARGE CONTRACTOR
construction type: CONCRETE
year of construction: 1967

MATERIALS
foundation: CONCRETE
floors: CONCRETE
walls: MASONRY-CONC.COLUMNS
roof: CONCRETE

DWELLING FACILITIES
wc: 1
shower: 1
kitchen: 1
rooms: 3
other: HALL

SOCIO-ECONOMIC DATA (related to user)

GENERAL: SOCIAL
user's ethnic origin: GREEK
place of birth: MACEDONIA
education level: NONE

NUMBER OF USERS
married: 2
single: -
children: 2
total: 4

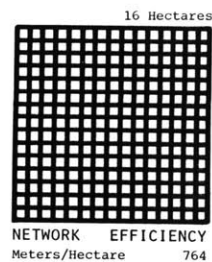
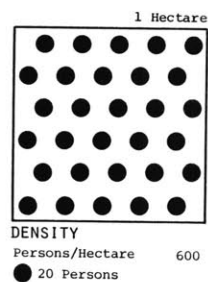
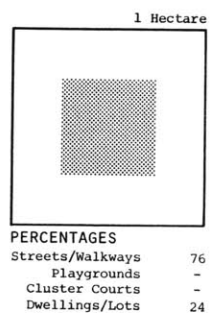
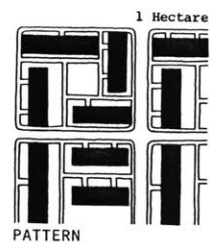
MIGRATION PATTERN
number of moves: 2
rural - urban: 1960, 1967
urban - urban: -
urban - rural: -
why came to urban area: EMPLOYMENT

GENERAL: ECONOMIC
user's income group: LOW
employment: SALESMAN
distance to work: 3 KM
mode of travel: PUBLIC

COSTS
dwelling unit: NA
land - market value: NA

DWELLING UNIT PAYMENTS
financing: PUBLIC FINANCED
rent/mortgage: NA
% income for rent/mortgage: NA

LAND UTILIZATION DIAGRAMS

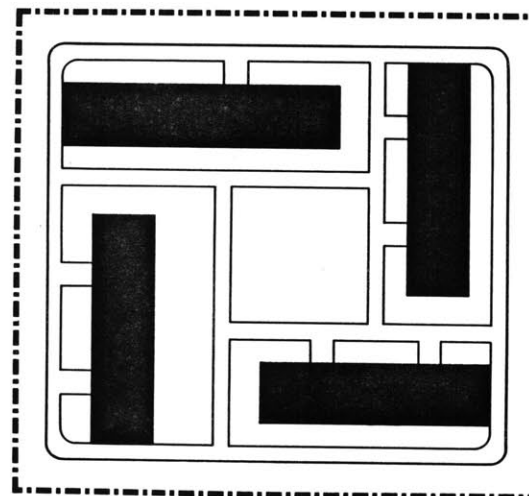


LOCALITY BLOCK LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.32	76.2
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.10	23.8
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.42	100.0

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	-	-	-
DWELLING UNITS	84	0.42	200
PEOPLE	252	0.42	600

NETWORK EFFICIENCY
 $\frac{\text{Network length (streets, walkways)}}{\text{Areas served (total area)}} = 310 \text{ m/Ha}$

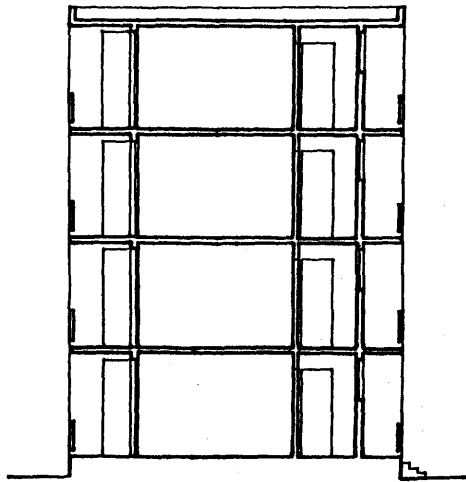


PATTERN

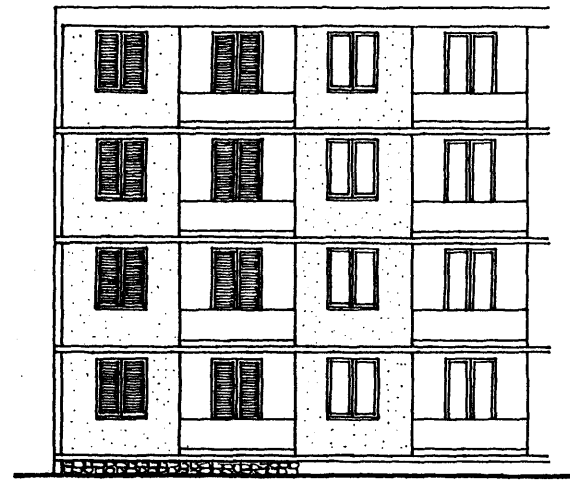
Public:	streets/walkways	
Semi-Public:	playgrounds	
Semi-Private:	cluster courts	
Private:	lots	
	dwellings	

LOCALITY BLOCK PLAN





SECTION



ELEVATION

PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT
 type: APARTMENT
 area (sq m): 52
 tenure: LEGAL OWNERSHIP

 LAND/LOT
 utilization: PRIVATE
 area (sq m): -
 tenure: LEGAL OWNERSHIP

 DWELLING
 location: PERIPHERY
 type: WALK-UP
 number of floors: 4
 utilization: SINGLE/INDIVIDUAL
 physical state: GOOD

 DWELLING DEVELOPMENT
 mode: INSTANT
 developer: PUBLIC
 builder: LARGE CONTRACTOR
 construction type: CONCRETE
 year of construction: 1963

 MATERIALS
 foundation: CONCRETE
 floors: CONCRETE
 walls: MASONRY-CONC. COLS.
 roof: CONCRETE

 DWELLING FACILITIES
 wc: 1
 shower: 1
 kitchen: 1
 rooms: 2
 other: HALL

SOCIO-ECONOMIC DATA (related to user)

GENERAL: SOCIAL
 user's ethnic origin: GREEK
 place of birth: EGYPT
 education level: PRIMARY SCHOOL

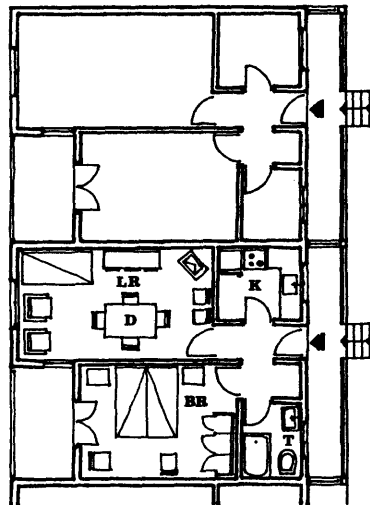
 NUMBER OF USERS
 married: -
 single: 1
 children: -
 total: 1

 MIGRATION PATTERN
 number of moves: 2
 rural - urban: -
 urban - urban: 1960, 1963
 urban - rural: -
 why came to urban area: REFUGEE

 GENERAL: ECONOMIC
 user's income group: LOW
 employment: WELFARE
 distance to work: -
 mode of travel: PUBLIC

 COSTS
 dwelling unit: NA
 land - market value: NA

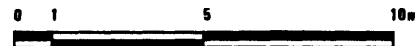
 DWELLING UNIT PAYMENTS
 financing: PUBLIC FINANCED
 rent/mortgage: NA
 % income for rent/mortgage: NA



TYPICAL FLOOR PLAN

KEY

LR Living Room
 D Dining/Eating Area
 BR Bedroom
 K Kitchen/Cooking Area
 T Toilet/Bathroom

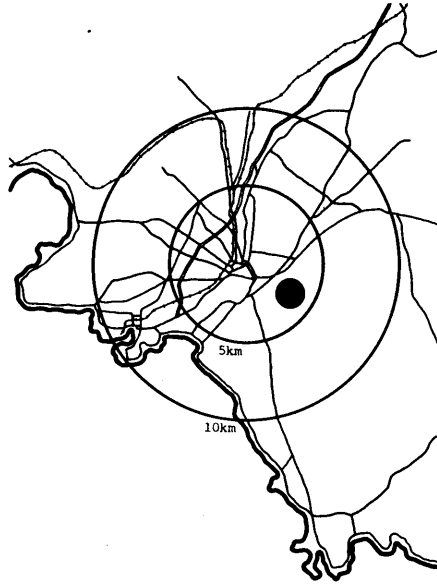


1:200

TYPICAL DWELLING

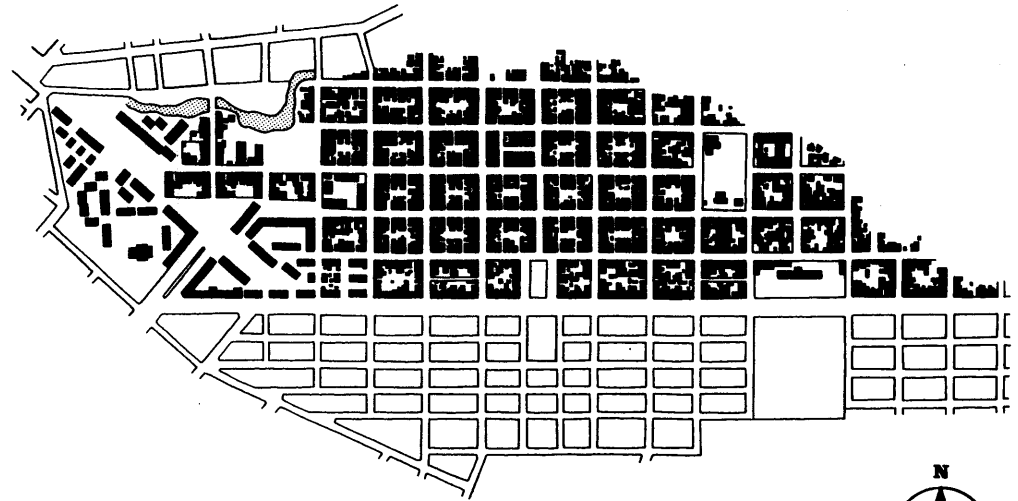
6 PROSFIGIKA, KESARIANI

REFUGEE SETTLEMENT



LOCATION: The locality is part of the municipality of Kesariani, located in the eastern area of Athens at the base of Mount Hymettos approximately 3km from the Athens city center. It occupies the north-central part of the municipality, bounded by the Athens University on the northeast, by Leoforos Kesarianis, the main artery of the municipality on the south and by the refugee public housing settlement on the west.

ORIGINS: The settlement was originally built by the government in the period between 1922-1940 as part of the housing program for the refugees from Asia Minor in the Athens area. Presently the settlement still remains a typical homogeneous refugee community, in terms of its inhabitants and the physical environment, because the initial housing policy and the current planning regulations for the settlement have restricted its evolution.



LOCALITY PLAN

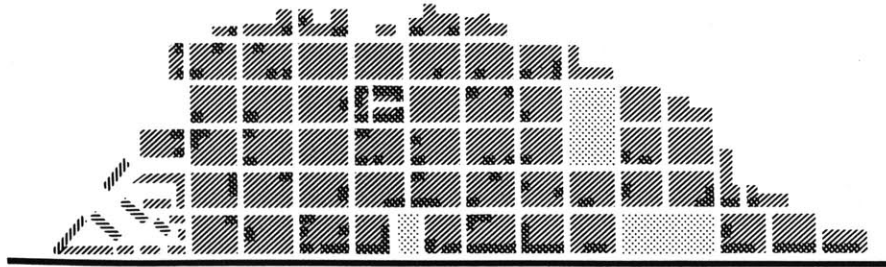
0 100 500m
1:10000

LAYOUT: The layout of the settlement is based on a tight gridiron system of secondary streets emerging from the main artery on the south end and fading out at a ravine on the north-east end forming a large number of small residential blocks. A second tight system of public walkways parallel to the streets provides access to the lots facing the inside of the blocks, further subdividing the blocks. The

inefficient and uneconomical layout was the result of the application of a gridiron system to subdivide the land into small plots in an attempt to provide each household with a privately owned lot. The settlement primarily consists of one storey row houses, built between 1922-23, along with two storey row houses, also built in 1922-23, three storey walk-ups, built in 1935-39, and four storey walk-ups built in 1965-66.

KEY

- S** School
Pg Playground
Pk Park
Ch Church
SC Social Center
P Plaza
 Bus Route



AREAS

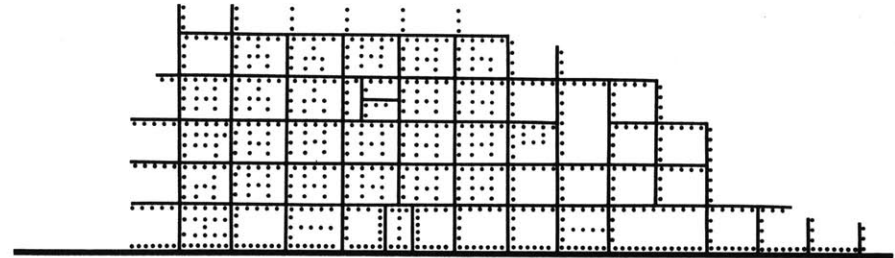
-  RESIDENTIAL
 COMMERCIAL
 INDUSTRIAL
 OPEN SPACES



LOCALITY LAND USE PATTERN

KEY

-  VEHICULAR
 PEDESTRIAN



LOCALITY CIRCULATION PATTERN

LAND USE: The central facilities and commercial activity is concentrated along the main circulation artery (Leoforos Kesarianis) with heavier concentration around the main plaza of the settlement. The rest of the locality is predominantly residential though a large number of small shops are scattered throughout the settlement. These randomly located shops are the result of the underemployment of the inhabi-

tants as well as of the need for additional income from the household property. There is also some light industry in the area, limited primarily to workshops.

CIRCULATION: The primary access to the settlement is along the main artery of Leoforos Kesarianis which forms the southern boundary of the locality. This

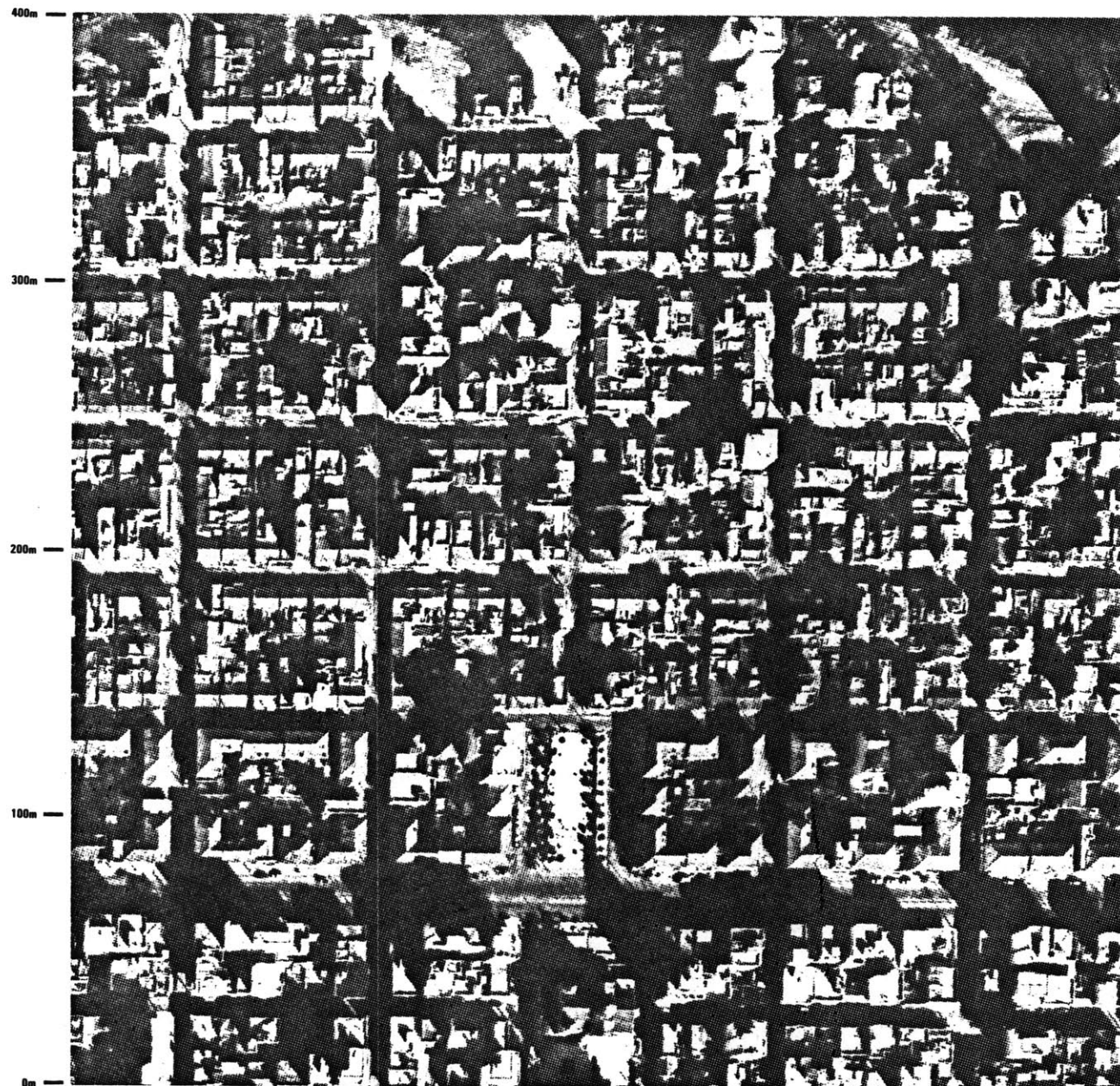
road bisects the municipality and is the main spine of access, circulation, public transportation and commercial activity for the area. A tight network of secondary streets, lacking hierarchy in terms of circulation and activity, ties the locality to the main artery on the south end. In addition to the street network, there is a network of the public walkways through the majority of the settlement that runs per-

pendicular to the main artery and connects the secondary streets through the blocks. This network provides access to the lots facing the inner courts of the blocks as well as through-the-settlement pedestrian circulation. The streets are asphalt paved and in good condition. The majority of the walkways are cement paved accommodating gutters for the drainage of the inner courts of the blocks.

COMMUNITY FACILITIES: The entire municipality has two kindergartens and five primary schools, four of which are housed in the same public building, while the fifth is housed in a private building. There is one secondary school also housed in an unsuitable private building. The municipality has a health center though inadequately equipped and insufficient for the needs of the inhabitants most of whom use the ones in adjacent municipalities. The only public open space for the settlement is the plaza on the main artery. There are many athletic facilities in the area though not only for local use.

POPULATION: The population of the settlement consists of approximately 2500 households with an average of 3.5 persons/household.

INCOME: The average monthly income for most of the households ranges between 12,000-20,000 drs (\$240-\$400).



LOCALITY SEGMENT AIR PHOTOGRAPH

0 50 100 150m
1:2500

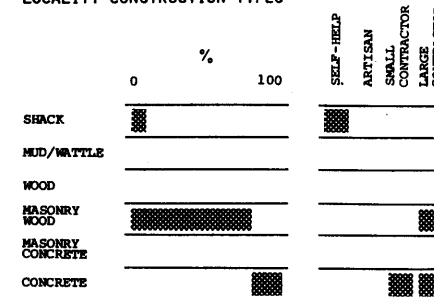




LOCALITY SEGMENT PLAN

0 50 100 150m
1:2500

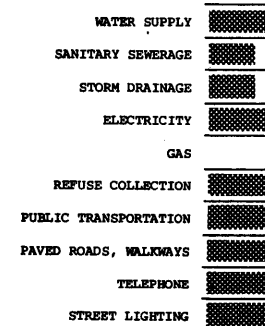
LOCALITY CONSTRUCTION TYPES



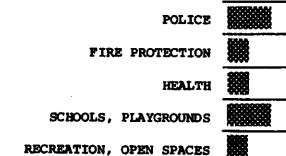
The chart shows (1) approximate percentage of each construction type within the total number of dwellings and (2) building group that generally produces each type.

Quality of information: Approximate

LOCALITY UTILITIES AND SERVICES



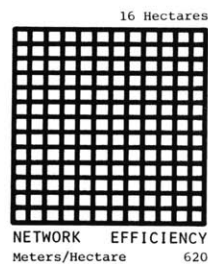
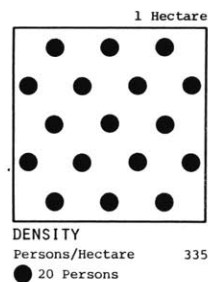
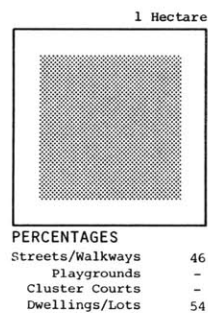
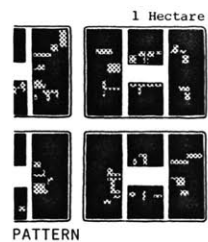
LOCALITY COMMUNITY FACILITIES



The chart illustrates the approximate availability of utilities, services, and community facilities at three levels: NONE, LIMITED, ADEQUATE.

Quality of information: Approximate

LAND UTILIZATION DIAGRAMS



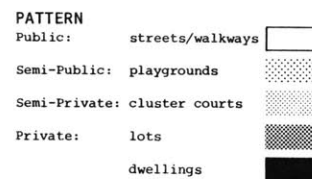
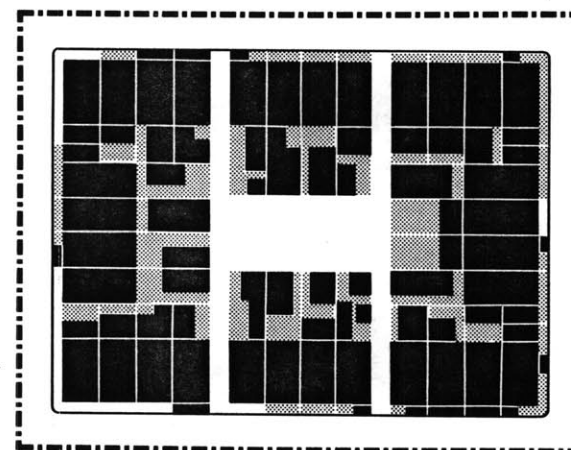
LOCALITY BLOCK LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.20	46.5
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.23	53.5
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.43	100.0

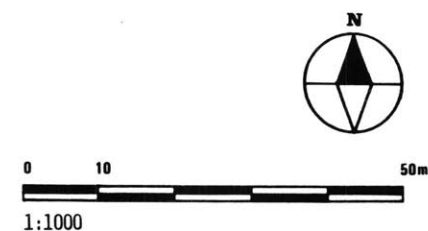
DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	44	0.43	102.3
DWELLING UNITS	48	0.43	116.6
PEOPLE	144	0.43	334.8

NETWORK EFFICIENCY
 $\frac{\text{Network length (streets, walkways)}}{\text{Areas served (total area)}} = 308 \text{ m/Ha}$

LOTS
 Average area, dimensions = 48 m²



LOCALITY BLOCK PLAN



PHYSICAL DATA (related to dwelling and land)

DWELLING UNIT
type: HOUSE
area (sq m): 44
tenure: LEGAL OWNERSHIP

LAND/LOT
utilization: PRIVATE
area (sq m): 78
tenure: LEGAL OWNERSHIP

DWELLING
location: INNER RING
type: ROW/GROUPED
number of floors: 1
utilization: SINGLE: FAMILY
physical state: GOOD

DWELLING DEVELOPMENT
mode: INSTANT
developer: PUBLIC
builder: LARGE CONTRACTOR
construction type: MASONRY-WOOD
year of construction: 1923

MATERIALS
foundation: STONE
floors: CONCRETE
walls: MASONRY
roof: WOOD-TILE ROOFING

DWELLING FACILITIES
wc: 1
shower: -
kitchen: 1
rooms: 2
other: -

SOCIO-ECONOMIC DATA (related to user)

GENERAL: SOCIAL
user's ethnic origin: GREEK
place of birth: ASIA MINOR
education level: NONE

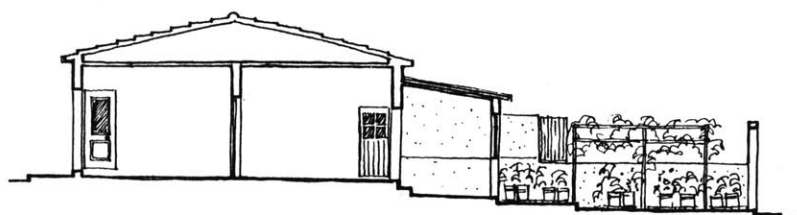
NUMBER OF USERS
married: 2
single: -
children: -
total: 2

MIGRATION PATTERN
number of moves: 2
rural - urban: 1922
urban - urban: 1924
urban - rural: -
why came to urban area: REFUGEES

GENERAL: ECONOMIC
user's income group: LOW
employment: WELFARE
distance to work: -
mode of travel: PUBLIC

COSTS
dwelling unit: NA
land - market value: NA

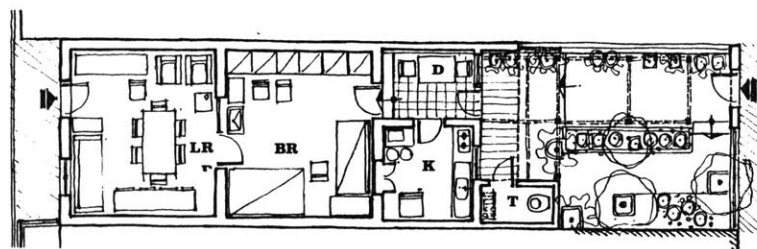
DWELLING UNIT PAYMENTS
financing: PUBLIC FINANCED
rent/mortgage: NA
% income for rent/mortgage: NA



SECTION



ELEVATION



PLAN

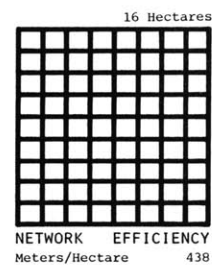
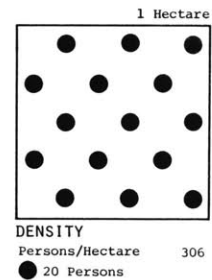
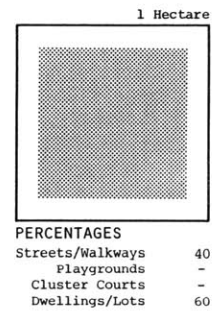
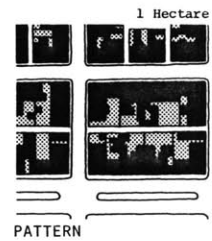
KEY

LR Living Room
D Dining/Eating Area
BR Bedroom
K Kitchen/Cooking Area
T Toilet/Bathroom

TYPICAL DWELLING

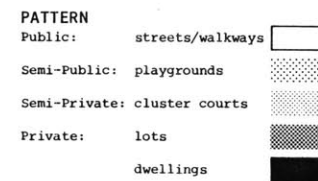
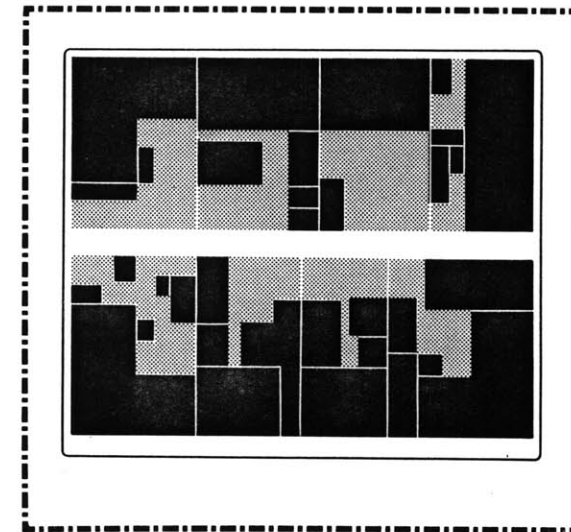


LAND UTILIZATION DIAGRAMS

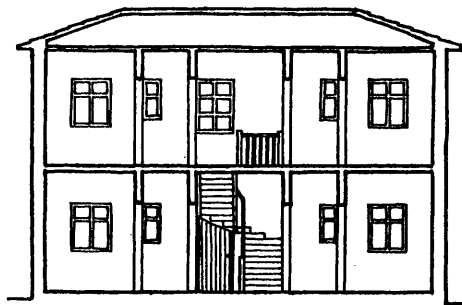


LOCALITY BLOCK LAND UTILIZATION DATA

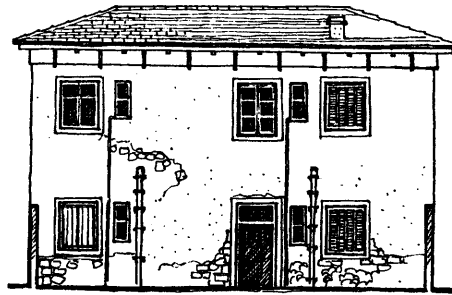
AREAS	Hectares	Percentages	DENSITIES	Total Number	Area Hectares	Density N/Ha
PUBLIC (streets, walkways, open spaces)	0.19	39.6	LOTS	-	-	-
SEMI-PUBLIC (open spaces, schools, community centers)	-	-	DWELLING UNITS	44	0.48	91.7
PRIVATE (dwellings, shops, factories, lots)	0.29	60.4	PEOPLE	147	0.48	306.3
SEMI-PRIVATE (cluster courts)	-	-	NETWORK EFFICIENCY			
TOTAL	0.48	100.0	Network length (streets, walkways) = 288 m/Ha			
			Areas served (total area)			



LOCALITY BLOCK PLAN



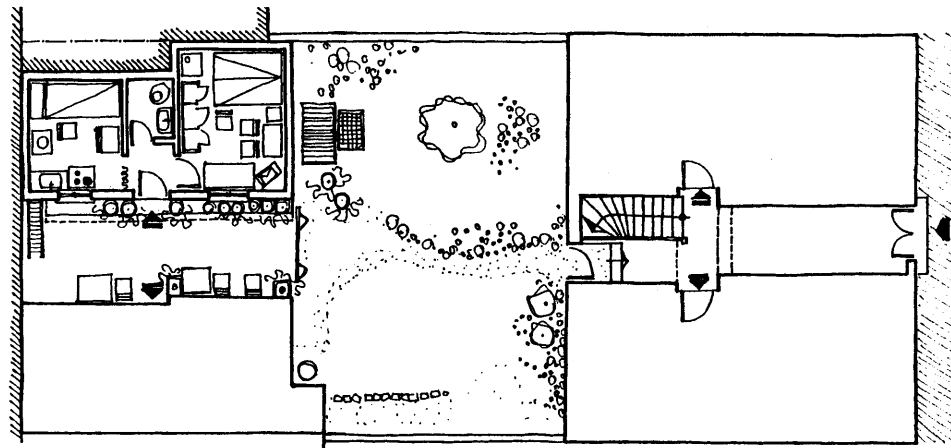
SECTION



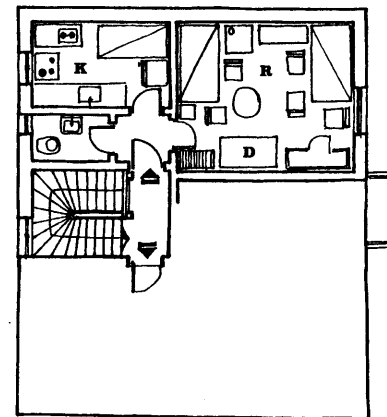
ELEVATION



ELEVATION



FIRST FLOOR PLAN



SECOND FLOOR PLAN

KEY

- R Room (multi-use)
 D Dining/Eating Area
 BR Bedroom
 K Kitchen/Cooking Area
 T Toilet/Bathroom

TYPICAL DWELLING

PHYSICAL DATA
 (related to dwelling and land)

DWELLING UNIT
 type: APARTMENT
 area (sq m): 35
 tenure: LEGAL OWNERSHIP

LAND/LOT
 utilization: PRIVATE
 area (sq m): -
 tenure: LEGAL OWNERSHIP

DWELLING
 location: INNER RING
 type: ROW/GROUPED
 number of floors: 2
 utilization: SINGLE: FAMILY
 physical state: FAIR

DWELLING DEVELOPMENT
 mode: INSTANT
 developer: PUBLIC
 builder: LARGE CONTRACTOR
 construction type: MASONRY-WOOD
 year of construction: 1923

MATERIALS
 foundation: STONE
 floors: WOOD
 walls: MASONRY
 roof: WOOD-TILE ROOFING

DWELLING FACILITIES
 wc: 1
 shower: 1
 kitchen: 1
 rooms: 1
 other: HALL

SOCIO-ECONOMIC DATA
 (related to user)

GENERAL: SOCIAL
 user's ethnic origin: GREEK
 place of birth: ASIA MINOR
 education level: NONE

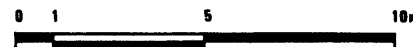
NUMBER OF USERS
 married: 2
 single: -
 children: -
 total: 2

MIGRATION PATTERN
 number of moves: 2
 rural - urban: 1922
 urban - urban: 1924
 urban - rural: -
 why came to urban area: REFUGEES

GENERAL: ECONOMIC
 user's income group: LOW
 employment: WELFARE
 distance to work: -
 mode of travel: PUBLIC

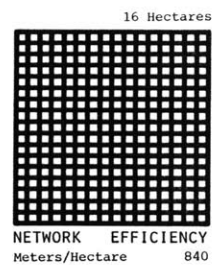
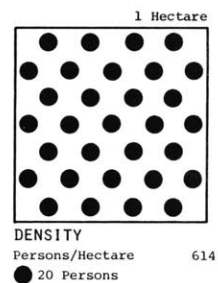
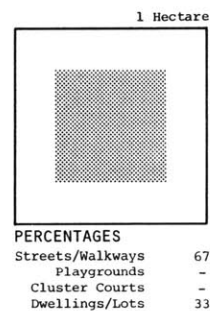
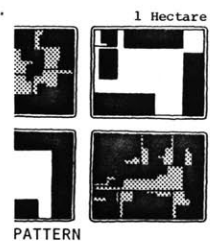
COSTS
 dwelling unit: NA
 land - market value: NA

DWELLING UNIT PAYMENTS
 financing: PUBLIC FINANCED
 rent/mortgage: NA
 % income for rent/mortgage: NA



1:200

LAND UTILIZATION DIAGRAMS



LOCALITY BLOCK LAND UTILIZATION DATA

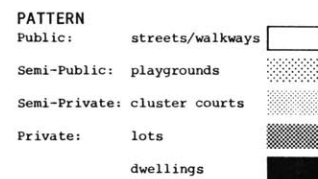
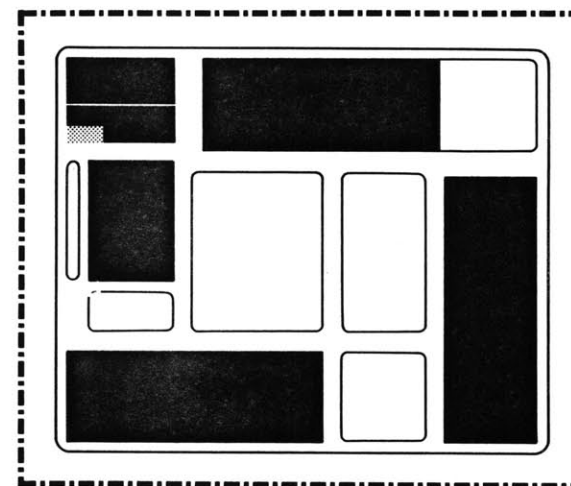
AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.29	67.4
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	0.14	32.6
SEMI-PRIVATE (cluster courts)	-	-
TOTAL	0.43	100.0

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	-	-	-
DWELLING UNITS	72	0.43	167.4
PEOPLE	264	0.43	613.9

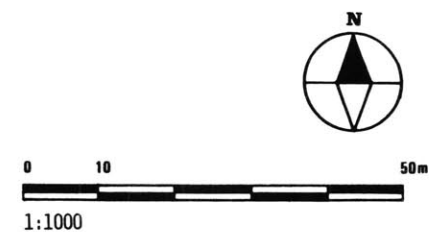
NETWORK EFFICIENCY

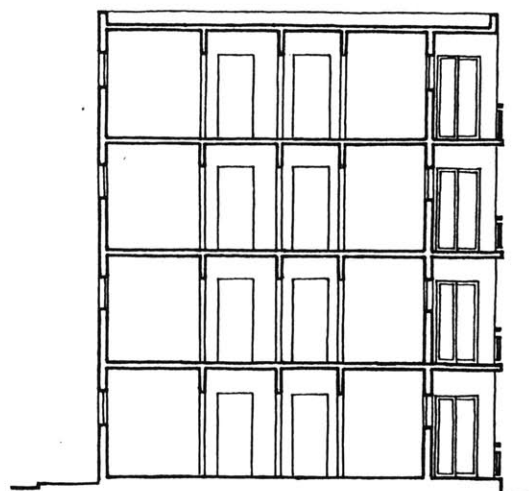
Network length (streets, walkways) = 307 m/Ha

Areas served (total area)

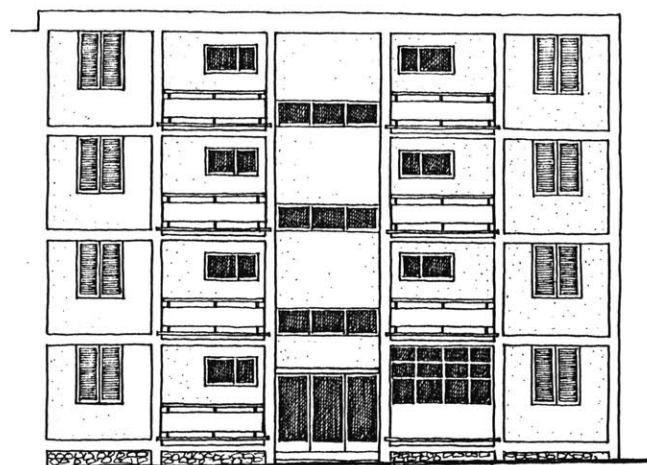


LOCALITY BLOCK PLAN

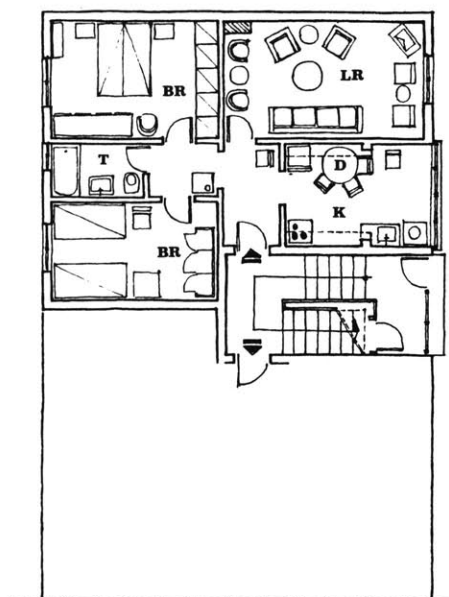




SECTION



ELEVATION



TYPICAL FLOOR PLAN

TYPICAL DWELLING

KEY

LR Living Room
D Dining/Eating Area
BR Bedroom
K Kitchen/Cooking Area
T Toilet/Bathroom


PHYSICAL DATA
(related to dwelling and land)

DWELLING UNIT
type: APARTMENT
area (sq m): 64
tenure: LEGAL OWNERSHIP

LAND/LOT
utilization: PRIVATE
area (sq m): -
tenure: LEGAL OWNERSHIP

DWELLING
location: INNER RING
type: WALK-UP
number of floors: 4
utilization: SINGLE: FAMILY
physical state: GOOD

DWELLING DEVELOPMENT
mode: INSTANT
developer: PUBLIC
builder: LARGE CONTRACTOR
construction type: CONCRETE
year of construction: 1965

MATERIALS
foundation: CONCRETE
floors: CONCRETE
walls: MASONRY-CONC. COLS.
roof: CONCRETE

DWELLING FACILITIES
wc: 1
shower: 1
kitchen: 1
rooms: 3
other: -

SOCIO-ECONOMIC DATA
(related to user)

GENERAL: SOCIAL
user's ethnic origin: GREEK
place of birth: ASIA MINOR
education level: NONE

NUMBER OF USERS
married: 2
single: -
children: 2
total: 4

MIGRATION PATTERN
number of moves: 2
rural - urban: 1922
urban - urban: 1964
urban - rural: -
why came to urban area: REFUGEES

GENERAL: ECONOMIC
user's income group: MODERATELY LOW
employment: HOUSE PAINTER
distance to work: VARIES
mode of travel: PRIVATE CAR

COSTS
dwelling unit: NA
land - market value: NA

DWELLING UNIT PAYMENTS
financing: PUBLIC FINANCED
rent/mortgage: NA
% income for rent/mortgage: NA

URBANIZATION MODEL

INTRODUCTION

PROJECT: URBANIZATION PROJECT IN THE OUTSKIRTS OF ATHENS

The project presented here is a model for a low income development of selected sites in the periphery of Athens where intense urbanization presently takes place in the form of illegal settlements. It is intended to anticipate future urbanization by channeling it into properly and efficiently planned areas.

The prepared model is based on the assumption that an attempt to provide housing for low income settlers in Athens can be positively accomplished by drawing from the established tradition of illegal settlements, demonstrating people's ability to solve their housing needs solely through their own efforts and resources.

Based on this understanding, the program and design requirements have been established from the study and evaluation of the case studies, representing typical low income settlements in Athens. The approach has been to determine the requirements of a low income housing program by measuring the inadequacies and potentials of the existing conditions.

The primary aim of the program is to efficiently utilize the existing human resources by stressing user involvement and to limit public intervention only to those aspects of the process which require large scale coordination and technical assistance.

The proposed model is a tentative layout and is intended as a study which may be used as a reference in an actual elaboration of a project, within the framework of a relevant program.

The site selected for the model is located in the north-eastern outskirts of the city of Athens. Though it is partially occupied by an illegal settlement, it has been chosen as the site for the model: first, because it is typical of the areas in which illegal settlements develop in terms of location and topography, second, because it can be considered as an entity within well-defined boundaries, and third, because it is large enough to accommodate the population of a self-contained community.

URBAN SECTOR

A large area of the city around the site has been selected for study in order to define the immediate urban context in terms of the existing and projected constraints that may affect the site development.

LAND USE:

- existing:
- The area surrounding the site on the north-east is low density residential primarily consisting of illegal settlements.
 - Commercial activity is concentrated in the centers of the adjacent settlements with higher concentration in the center of Ano Liosia.
 - A large number of industries are scattered throughout the area, mainly consisting of small scale light industries and workshops.
 - There are a few large cultivated areas, along with a number of smaller ones scattered among the illegal settlements.
 - Special uses in the area include army and government installations and garbage dumps for the Athens area.
- projected:
- The population projections for the area indicate that it will double within the next 10 years (by 1900) and triple within the next 20 years (by 2000). This will result in substantial expansion of the residential area. The existing illegal settlements are to be upgraded, infilled and included into the town map.

- The industrial areas will be expanded and an industrial park will be installed southeast of the Acharnes settlement.
- The cultivated areas are to be maintained with small expansion beyond the perimeter of the residential areas.
- The commercial/administrative centers will expand and two new extensive centers will be developed in the area of Ano Liosia and Acharnes.
- A number of special uses are also proposed for the area: university schools, zoological and botanical gardens, athletic and recreational facilities.

CIRCULATION:

- existing:
- Leoforos Aspropyrgou Road, through the site, providing access to the industrial areas of Elefsina and Aspropyrgos on the west.
 - Leoforos Filis Road, on the eastern boundary connecting the site to the adjacent settlements of the municipality on the north and to the Athens city center on the southeast.
- proposed:
- Extension of the existing Leoforos Aspropyrgou Road to the west providing access to the settlement of Acharnes and to the Athens-Lamia highway.
 - By-pass highway (Leoforo Stavrou-Elefsinos) along the north boundary of the site providing access to the major highway system.



- INDUSTRIAL
- QUARRIES
- GARBAGE DUMPS

- LEGAL
- ILLEGAL
- URAL



KEY

- EXISTING ROADS
- PROPOSED ROADS
- RAILROAD

CIRCULATION



0 100

1:10000

SITE DATA

LOCATION:

- Municipality of Ano Liosia, Athens Metropolitan Area.
- Approximately 8.5 km northeast of the industrial areas of Elefsina and Aspropyrgos.
- Within walking distance from the adjacent settlements of Ano Liosia, Zefirio and Kamatero.
- Within the area of intense urbanization due to illegal settlements in the periphery of Athens.

ACCESS:

- Leoforos Aspropyrgou Road, through the site along the northeastern boundary.
- Leoforos Filis Road on the eastern boundary.
- Proposed highway along the northern boundary.

AREA/BOUNDARIES:

- Approximate gross area of the site: 124 Hectares.
- Site well defined by topographic and man-made boundaries/barriers:
 - Athens-Korinthos railroad on the north.
 - Mount Gerovouno on the south and west.
 - Leoforos Filis Road on the east.

TOPOGRAPHY/SOIL CONDITION

- Elongated site. Steep slopes along the southern boundary, 10-15% slope through the middle of the site, nearly level around the existing road.
- Soil of compacted gravel, sand and stone.

LAND OWNERSHIP:

- Private ownership.
- Site consisting of long strips of agricultural properties with access to the existing road on the north.

LAND COST:

- Compatible for low cost residential development. (1500-2000 drs per sq.m., \$30-40 per sq.m.)

UTILITIES:

- Feasible connection to the existing/proposed municipality networks.

TRANSPORTATION:

- Public transportation available:
 - to the Athens city center.
 - to the adjacent settlements.
 - to the industrial areas.

EXISTING STRUCTURES/EASEMENTS/RIGHTS-OF-WAY

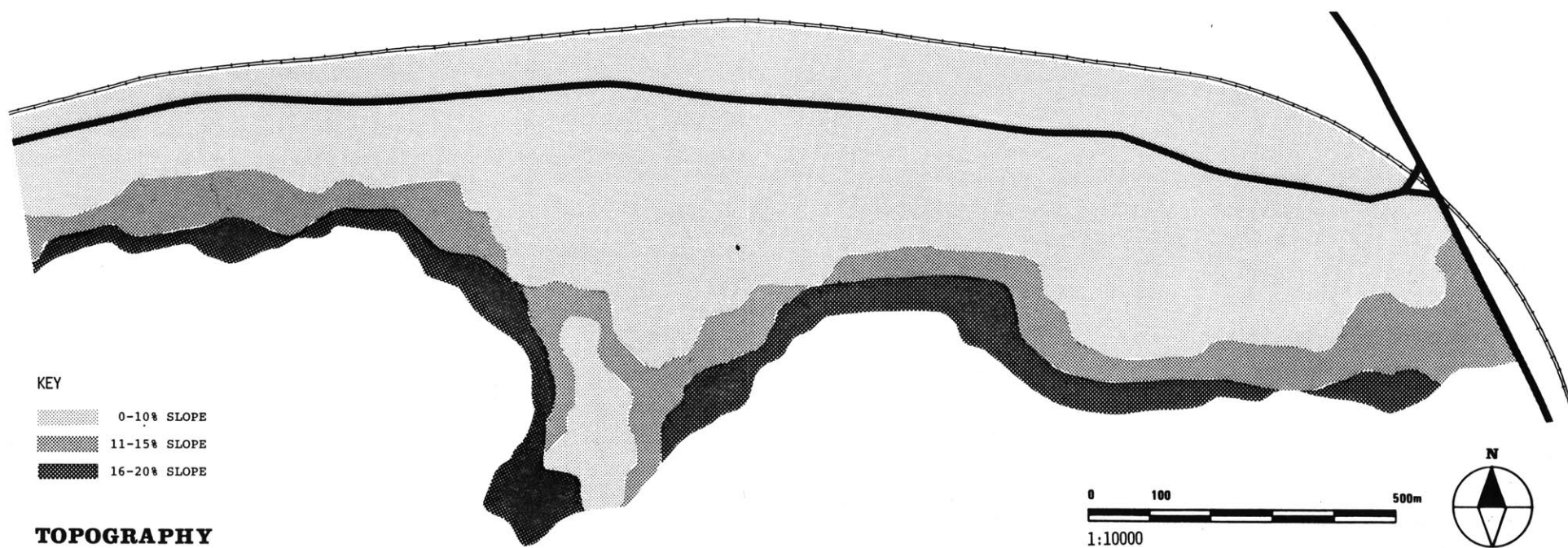
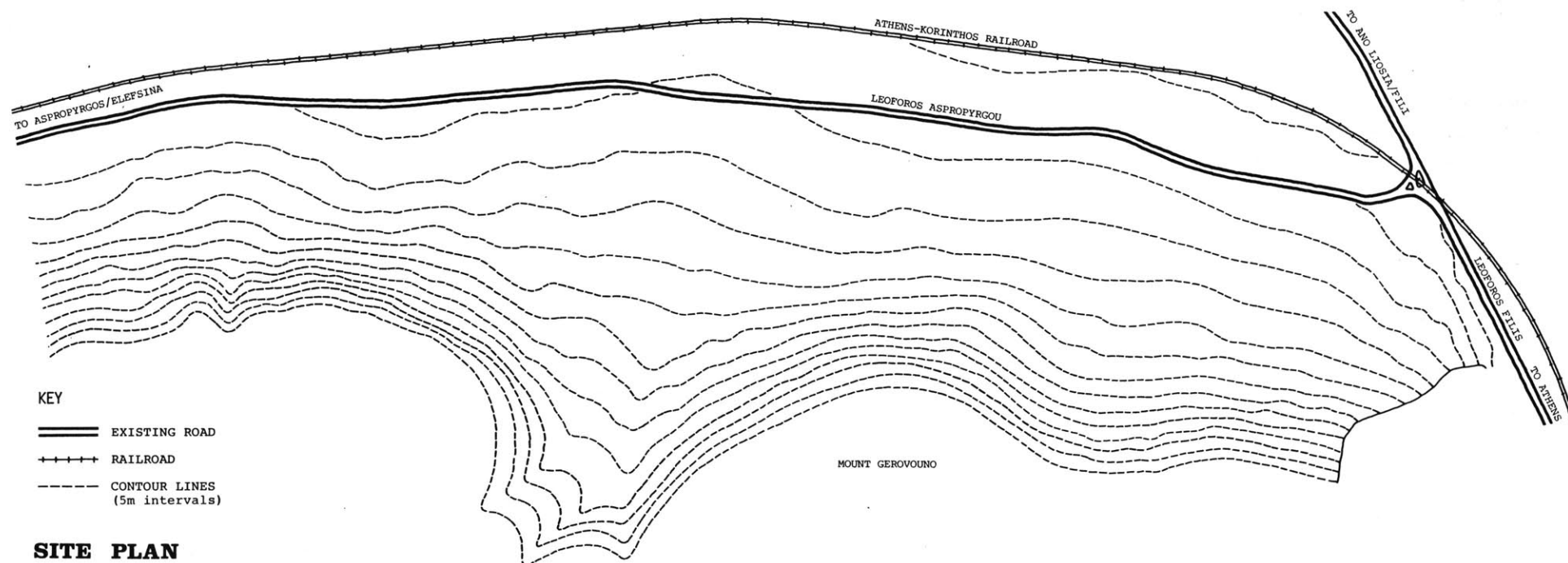
- Existing road through the site along the northern boundary.
- Abandoned quarry on the northeast end.

OTHER FACTORS:

- Views : Positive from the southern area of the site.
- Smoke, Odors: None.
- Dust : From heavy industrial traffic on the existing road.
- Flooding : Positive drainage due to the slope.
- Hazards : Heavy industrial traffic along the existing road causing accidents, noise and dust.

RECOMMENDED INVESTIGATIONS:

- Soil conditions should be investigated to determine:
- the sewage disposal system.
 - the feasibility of site work on the steeper slopes.



PROJECT DATA

PLANNING POLICIES/GOALS

INTENDED USE:

- Primarily residential, with supporting commercial and community facilities.
- Area will be reserved for light industries.

POPULATION/DENSITY/INCOME GROUPS:

The development is planned for a medium density low-income community:

- Approximately 40,000 people, with an average gross density of 300 persons/Ha.
- Target income groups: very low, low, moderately low.
- Areas reserved for middle income groups.

LAND TENURE:

The development will allow for a variety of tenure options:

- Primarily private and horizontal condominium ownership
- Rental and long term lease will also be included.

DWELLING UNITS:

- Approximately 8,000 dwelling units, with an average of two dwelling units per lot.
- The majority of the housing will consist of privately owned dwelling units.
- Rental units will be provided on a small scale as temporary housing for the households in the process of their settlement in the site.

LAND USE:

- Private/Semi-Private (residential, commercial, industrial) 60-70% of the area.
- Semi-Public (community facilities): 15-20% of the area.
- Public (circulation network): 15-20% of the area.

CIRCULATION:

- The circulation network will provide the framework for the development and will accommodate the utility networks.
- The internal circulation network will be developed around the existing through road. This road will provide access to the external circulation network, connecting the site to the adjacent settlements, to the Athens city Center, to the industrial areas.

UTILITIES:

The utility systems will be connected to the existing/proposed networks as follows:

- Electricity: to the existing municipality network.
- Water: to the existing municipality network.
- Storm drainage: to the proposed municipality network. Until then to the Liosion Ravine and from there to Kifisos drain.
- Sewage disposal: to the proposed city network. Until then it will be solved locally using the septic-tank/percolation system.

DEVELOPMENT MODE:

The site will be developed progressively, the physical plan allowing for the following alternatives:

- Development of the site in sections, each one functioning as an entity.
- Development of certain segments throughout the site, each one functioning as a growth core.

PLANNING ELEMENTS:

Flexible planning and layout, allowing:

- Maximum private responsibility in the development and maintenance of the project.
- Application of various housing and tenure schemes.
- Incremental growth of the development.

FINANCING:

The cost of the development will be allocated as follows:

- Initial cost by the public sector.
- Site development cost by both the public and private sector.
- Dwelling construction cost solely by the private sector.

DEVELOPMENT GOALS:

To provide lots for low income groups within an overall subdivision plan that considers infrastructure, open spaces and public facilities.

LAND SUBDIVISION

The goal of the physical plan for the development is:

- to allow maximum private responsibility in the development and maintenance of the project.
- to provide flexibility in land subdivision allowing the application of alternative tenure and housing schemes.
- to provide for the possibility of progressive development.
- to optimize the components of the physical layout that will mainly affect the cost of the development.

The overall concept of the layout is based on consideration of the following issues:

- access, in relation to the existing/proposed circulation network.
- boundaries/barriers, in terms of appropriate land utilization.
- site topography, with respect to the natural slope.

The street layout is organized to facilitate efficient circulation throughout the site, to eliminate ambiguity of cir-

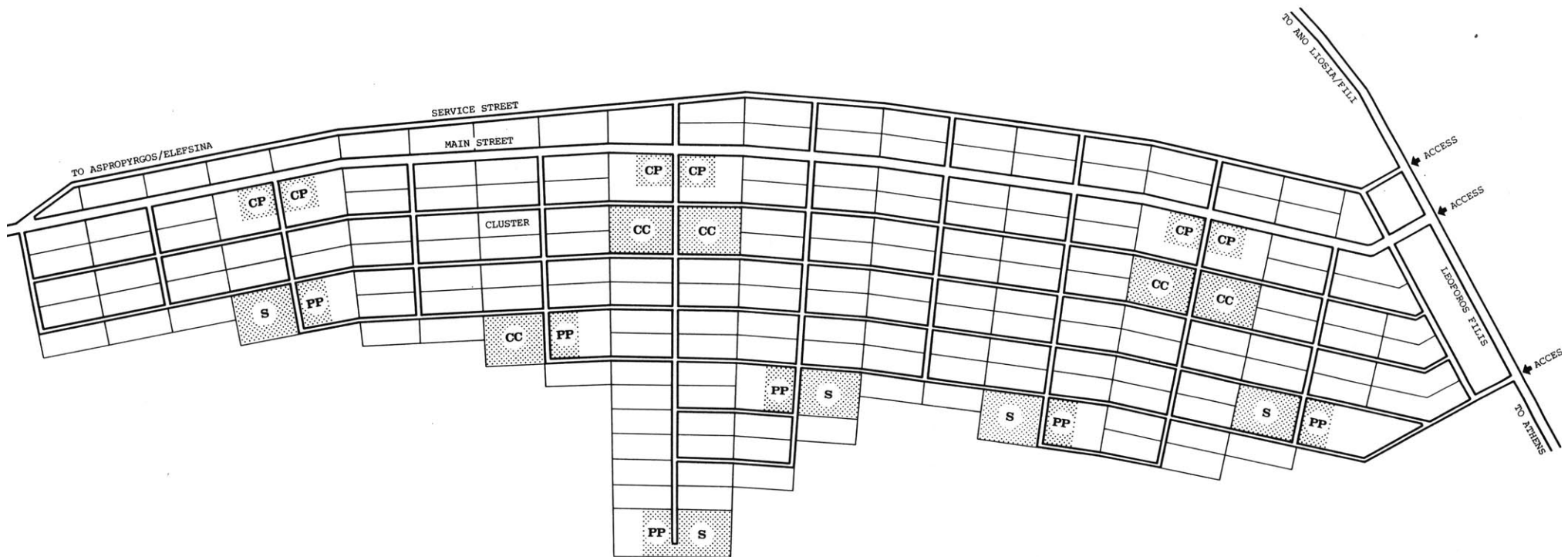
ulation and land utilization patterns, to optimize cluster and block sizes and to optimize utility infrastructure networks.

The block layout is based on a grid system which allows land subdivision and development, independent of the street layout. Therefore the circulation network efficiency, rather than the plot dimensions, is the decisive factor that determines the size of the blocks. This also allows optimum public land and infrastructure in a site development that calls for very small plot sizes, compatible for a low income settlement.

The main component of the blocks are clusters of lots, organized around semi-private courts. This makes "horizontal condominium" the main type of land tenure, providing flexibility of land subdivision and development within the blocks. It also provides a potential for the physical and social organization of small neighborhoods within the blocks.

KEY

- S** SCHOOLS
PP PLAYGROUNDS, PARKS
CP COMMUNITY PLAZAS
CC COMMUNITY CENTERS



LAND SUBDIVISION PLAN



LAND UTILIZATION

The area is primarily residential with supporting community facilities, commercial facilities and light industries.

These land utilization types are classified as follows:

PUBLIC LAND: streets, walkways, plazas.
SEMI-PUBLIC LAND: schools, playgrounds, parks, community facilities (administration, post office, bus terminal, fire station, health center, church, market, reserved land).
PRIVATE LAND: residential, commercial, small industries.
SEMI-PRIVATE LAND: cluster courts.

The land is allocated for these as follows:

	Hectares	Percentages
PUBLIC	17.2	13.8
SEMI-PUBLIC	18.4	14.8
PRIVATE/SEMI-PRIVATE	88.8	71.8
Residential/commercial	73.7	59.2
Industrial	15.1	12.2
TOTAL	124.4Ha	100.0%

The land utilization pattern is based on the site topography, boundary conditions, land values and phased development.

The plazas accommodate public facilities and focus community and commercial activity. Since they are related to public

transportation and support adjacent commercial development, they are located along the main street. Their specific location is determined by the size of the population served and the accessibility from adjacent residential areas. They define smaller self-contained communities within the site which allows site development in stages.

The community facilities are grouped in two community centers corresponding to the first two stages of development. Each one is located next to a public plaza creating a center of community activity.

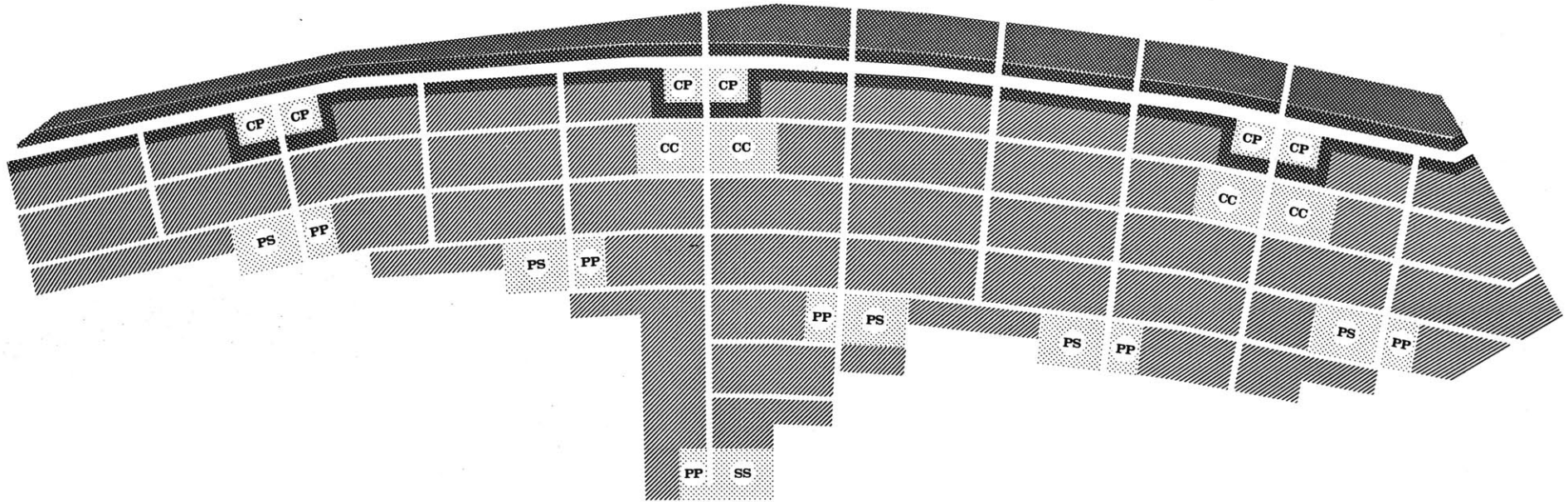
The school areas accommodate school buildings, small soccer fields, playgrounds and green areas. They are equally distributed along the southern boundary of the site, where the steep land is unsuitable for construction but adequate for open spaces.

A zone of commercial facilities will develop along the main street running along the site, with denser concentration around the plazas. Larger lots are provided along the main street to encourage and accommodate such development. Commercial facilities will also develop along the residential streets, though on a much smaller scale.

A zone of industrial lots, mainly for small scale light industries, is reserved along the northern boundary of the site, next to the railroad and adjacent to the commercial development.

KEY

PS	PRIMARY SCHOOL	CC	COMMUNITY CENTER:
SS	SECONDARY SCHOOL		ADMINISTRATION
PP	PLAYGROUND, PARK		SOCIAL SERVICES
			HEALTH CENTER
CP	COMMUNITY PLAZA:		NURSERY
	BUS TERMINAL		POST OFFICE
	CHURCH		FIRE DEPARTMENT
	RECREATION		CENTRAL MARKET



AREAS

	RESIDENTIAL
	COMMERCIAL
	INDUSTRIAL
	OPEN SPACES

LAND UTILIZATION PLAN



CIRCULATION

The circulation network provides the framework for the development of the site. Besides accomodating vehicular and pedestrian movement, it determines the overall land subdivision, land utilization pattern and the layout of the utility networks. It also defines the growth pattern as well as the land value pattern of the development.

The circulation layout is based on:

- access from the existing/proposed circulation network.
- efficiency of vehicular/pedestrian circulation throughout the site.
- street hierarchy in terms of circulation mode and related activity.
- optimum circulation network efficiency (length of streets per area served).
- optimum cross circulation distances for pedestrians.
- optimum utility network (length of network per area served).
- site topography in relation to surface drainage.
- development of the site in stages.

The circulation layout of the site consists of a main street

running along the site, a series of secondary streets, emerging from the main street, a series of tertiary connecting streets and a service road along the north boundary.

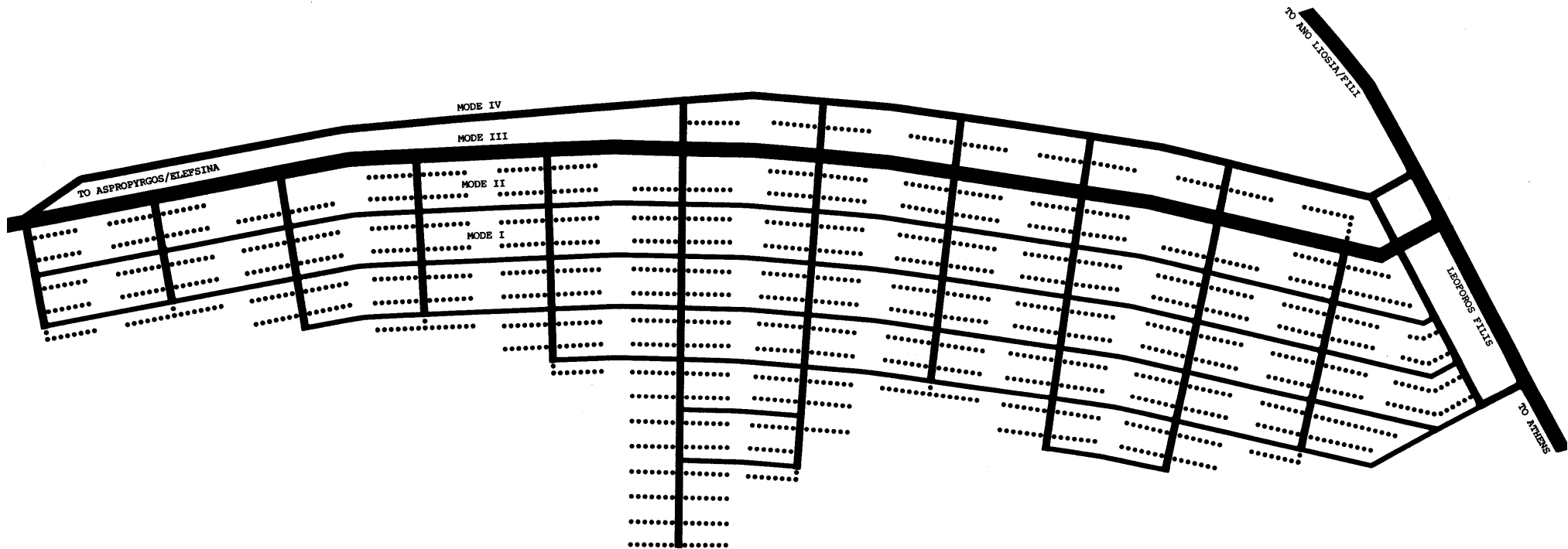
The existing road along the site is widened and upgraded. It forms the main commercial spine of the development, accomodates local and through-traffic and provides access to the internal circulation network.

The secondary network consists of a series of parallel streets emerging from the main street. They provide access to the residential area by accomodating all the entrances to the clusters. A series of tertiary streets is mainly introduced to provide efficient cross circulation.

A service road is provided on the north boundary next to the railroad, with direct access from Leoforos Filis Road. This road runs through the site, along the industrial zone providing direct access from outside the site. It also accomodates the industrial through traffic to the industries beyond the site on the west, thus eliminating heavy traffic through the residential area.

KEY

- PUBLIC STREETS
 PRIVATE STREETS



- MODE I : CLUSTER COURTS
 MODE II : RESIDENTIAL STREETS
 MODE III : COMMERCIAL STREET
 MODE IV : THROUGH-TRAFFIC STREET

CIRCULATION PLAN



0 100 500m
 1:10000

BLOCKS, LOTS, CLUSTERS

The block layout is based on a grid system of land subdivision in which "lot clusters" are the main component of the block layout and "horizontal condominiums" are the main type of land tenure.

The individual lots are grouped into clusters, around a semi-private court which serves as an access space as well as a common open space for the surrounding lots. The court is owned in condominium by the occupants of the lots, who share its use, control and maintenance.

The block presented in this section is typical of the layout and consists of four clusters, each one accommodating an average number of 25 lots.

The cluster size is determined by the desirable number of households per cluster, by the lot size, compatible with the income group concerned, and by the court configuration, allowing efficient use, control and maintenance.

The cluster arrangement and orientation are determined by the site topography to allow minimum site work and efficient storm drainage and by the street layout to provide convenient access and optimum utility networks.

The lot sizes vary depending on their adjacency to secondary and tertiary streets to allow different land utilization and land values.

BLOCK LAND UTILIZATION DATA

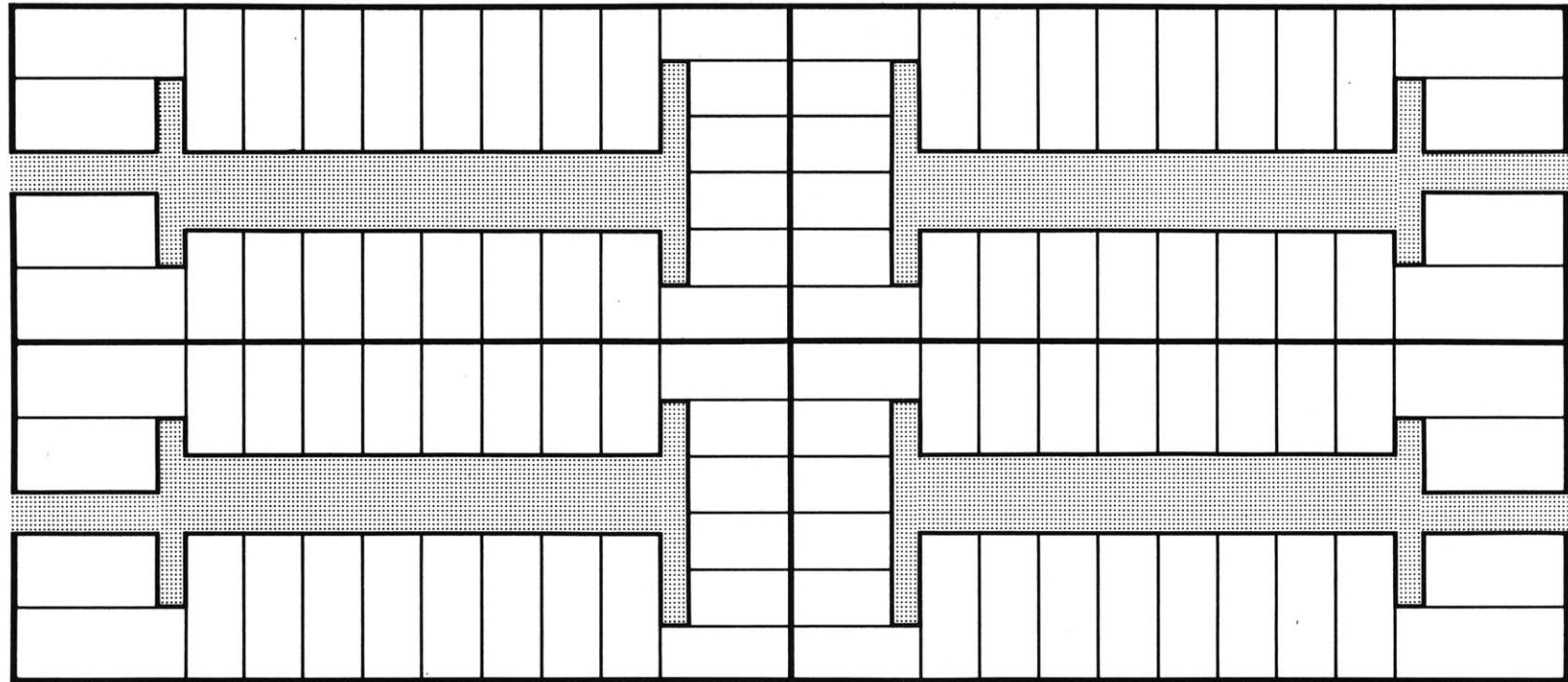
AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	0.24	11.3
SEMI-PUBLIC (open spaces, schools, community centers)	-	-
PRIVATE (dwellings, shops, factories, lots)	1.52	71.3
SEMI-PRIVATE (cluster courts)	0.37	17.4
TOTAL	2.13	100.0

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	104	2.13	48.8
DWELLING UNITS	208	2.13	97.7
PEOPLE	832	2.13	390.6

NETWORK EFFICIENCY

$$\frac{\text{Network length (streets, walkways)}}{\text{Areas served (total area)}} = 149 \text{ m/Ha}$$

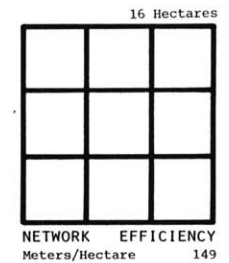
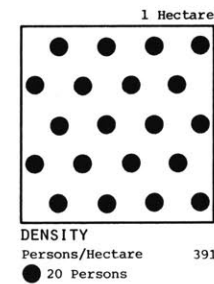
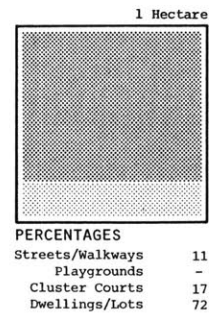
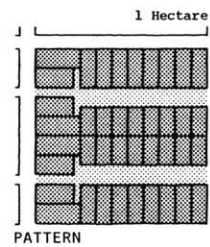
$$\text{AVERAGE LOT AREA} = 146 \text{ m}^2$$



LAND UTILIZATION DIAGRAMS

PATTERN

Public:	streets/walkways	
Semi-Private:	cluster courts	
Private:	lots	



BLOCKS, LOTS, CLUSTERS

In the proposed land subdivision system, the size of the block is not determined by the dimensions of the individual lots. This allows optimization of public land, circulation network and utility infrastructure in a low income development that calls for very small lots.

The proposed block layout provides flexibility in land use and densities and allows application of different housing systems and land tenure types. Although the block are similar in shape and size they still permit a variety of options in:

- Land uses: residential, residential/commercial, light industries, schools, playgrounds, parks, reserved areas, other uses.
- Housing subsystems: core units, single family units, walk-ups, commercial facilities with residential units, other types of units, with medium and high densities.
- Land tenure types: ownership, rental, lease, sublet, without legal/administrative complications.

The blocks included in the layout segment of this section, represent only a small sample of clusters which can be provided to match different economic, social and community requirements.

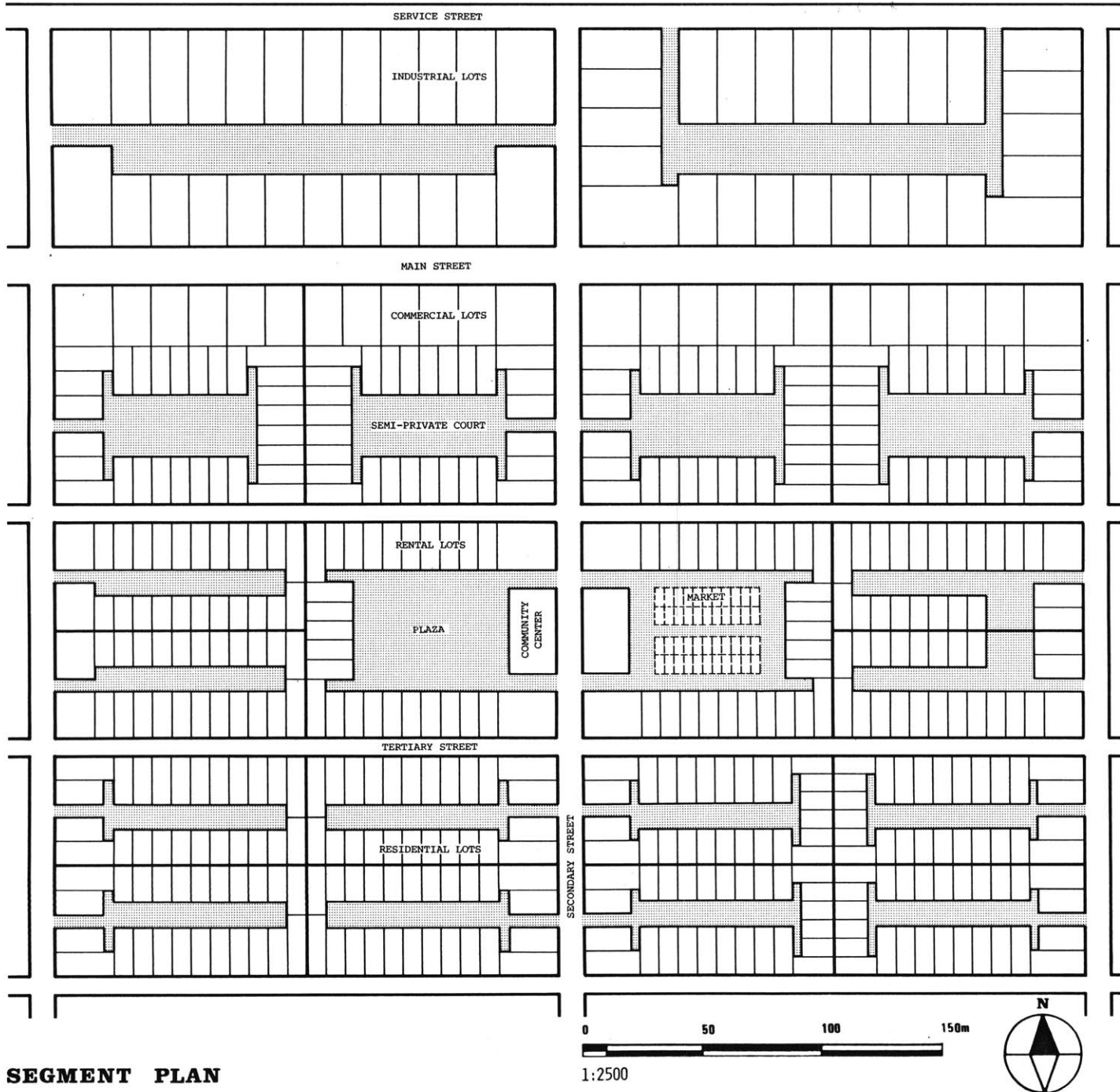
LAND UTILIZATION DATA

AREAS	Hectares	Percentages
PUBLIC (streets, walkways, open spaces)	17.16	13.8
SEMI-PUBLIC (open spaces, schools, community centers)	18.43	14.8
PRIVATE/SEMI-PRIVATE (lots, cluster courts)	88.83	71.4
residential	73.71	59.2
industrial	15.12	12.2
TOTAL	124.42	100.0

DENSITIES	Total Number	Area Hectares	Density N/Ha
LOTS	3960	59.28	67
DWELLING UNITS	7920	59.28	134
PEOPLE	39600	59.28	668

NETWORK EFFICIENCY

$$\frac{\text{Network length (streets, walkways)}}{\text{Areas served (total area)}} = 149 \text{ m/Ha}$$



WATER SUPPLY

The water supply network has been designed as a grid system with no dead ends, at a standard level which assumes water service to the individual lots. All primary distribution pipes are located on the streets to facilitate access for installation and maintenance.

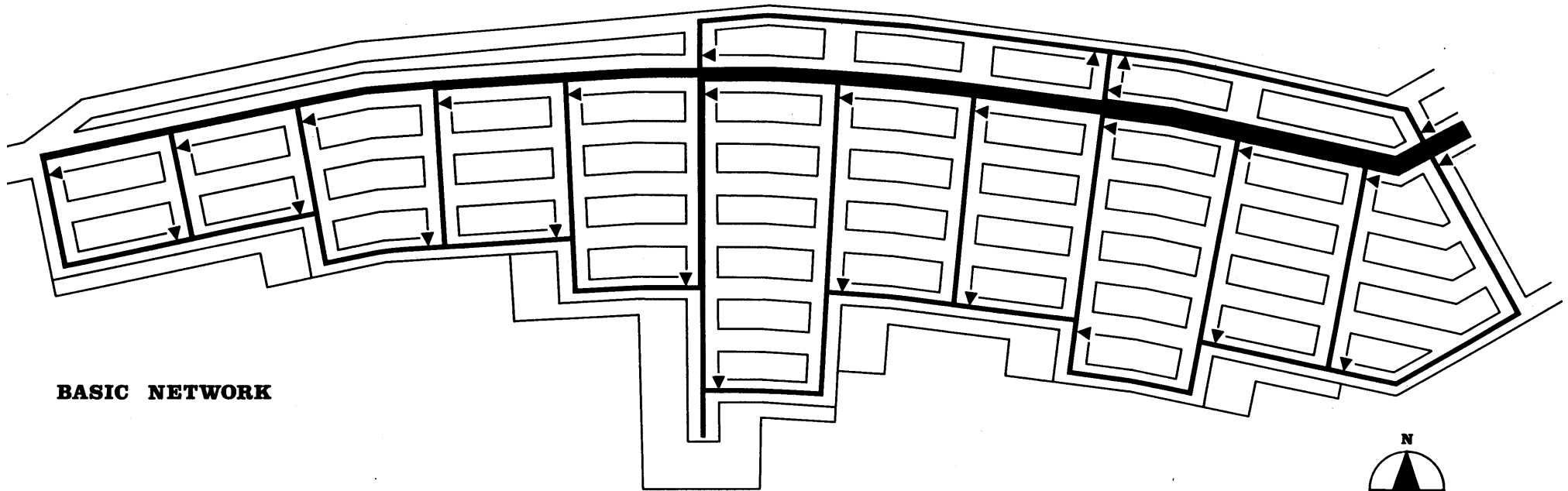
The main distribution line, located along the main street, is connected to the municipality water supply network. A series of 4" secondary distribution lines, emerging from the main, are located on the secondary streets which accommodate the entrances to the clusters. These provide water to 2" block distribution lines located in the shared court of each cluster. From these 1" pipes supply water to the individual lots. Two 4" pipe loops, branching off the main, provide water to the industrial area.

The secondary distribution network is designed in loops to allow for even pressure distribution and for phased development of the network.

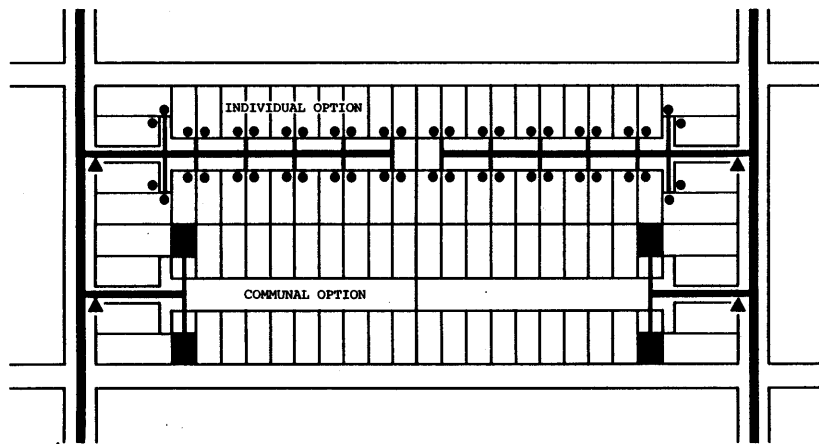
Valves are located in the network to allow maintenance without interrupting the water flow for the entire site. Because they are relatively expensive, a minimum number has been used, based on a maximum walking distance of 200m for access to water during emergencies.

Meters are provided at all individual service connections. Though this represents a substantial initial and operating cost, it is suggested to prevent excessive water consumption.

WATER SUPPLY NETWORK



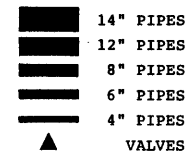
BASIC NETWORK



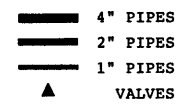
BLOCK NETWORK

KEY

BLOCK NETWORK



BLOCK NETWORK



WATER SUPPLY: BASIC NETWORK

		Length	%	M/Ha
PIPES	4"	8380	75.5	67.4
	6"	1050	9.4	8.4
	8"	440	4.0	3.5
	12"	660	5.9	5.3
	14"	590	5.3	4.7
	Total	11120m	100.0	89.3

		Number	%	U/Ha
VALVES	4"	28	96.6	0.22
	14"	1	3.4	0.01
	Total	29	100.0	0.23

SEWAGE DISPOSAL

The sewage disposal network presented here is the conventional water-borne system which is intended to function as part of the proposed municipality network with a central treatment plant.

The network is designed at a standard level with service connections to the individual lots. The scheme is dictated by the natural slope of the site with pipe sizes determined by existing slopes and necessary capacity.

A network of 8" pipes on the secondary streets provides service connections to the individual clusters. These are connected to the main disposal pipe, located along the main street at the lowest point of the site, which connects to the future municipality sewage network.

Manholes for clearing and maintenance are located at the entrance of each cluster, at intersections, at changes of direction and at dead ends, with a maximum spacing of 150m.

The water-borne sewage disposal system for the low income development of the site implies a series of problems and constraints:

- large initial capital investment.
- extensive technological requirements that limit user involvement.
- operational facilities that rarely coincide with the completion of dwelling units.
- voluminous supply of water for efficient operation.
- need for a central sewage plant.

Because of the expense involved and underestimation of the problem by the authorities, the water-borne sewage system is always included in long term plans that are rarely implemented.

It is therefore apparent that there is a need for viable sewage disposal options in the context of low income developments.

The sewage disposal system presented here as an alternative is the septic tank system which can be specifically designed to suit a low income development:

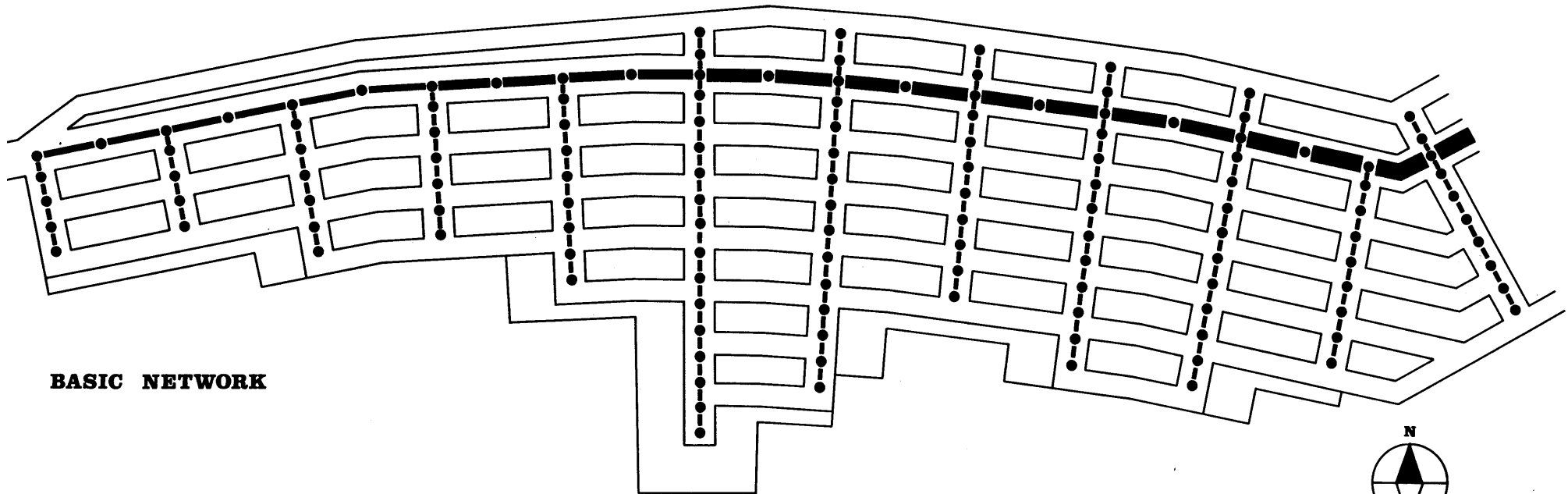
- provision of one septic tank for each cluster of lots.
- location of the septic tank at the entrance of the cluster on a public street.
- service connections from each lot to the septic tank.
- underground percolation fields in the cluster courts, along the streets and open public areas.
- periodic removal of sludge to a designated disposal area.

This system has the following advantages for the proposed development:

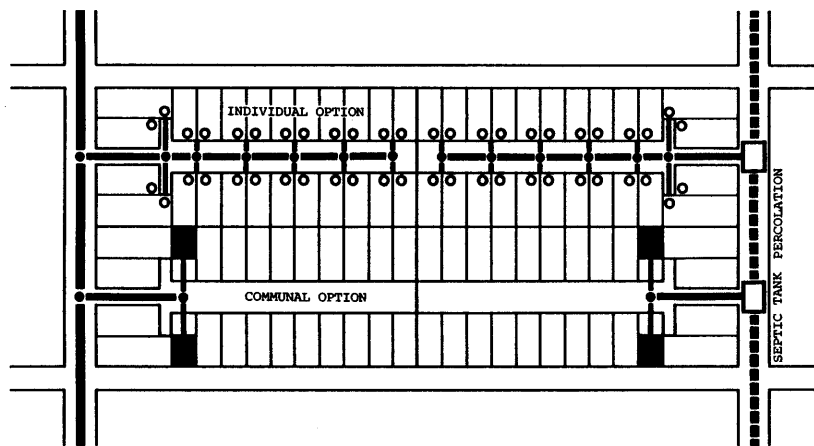
- the system is entirely contained within the development.
- it is less expensive to construct.
- it does not rely on large amounts of water for operation.
- it keeps the level of technology within local capacity.
- installation and maintenance can be done by the users.

However, implementation of the septic tank/percolation system requires investigation of soil conditions to prevent contamination of ground water.

SEWAGE DISPOSAL NETWORK



BASIC NETWORK



BLOCK NETWORK

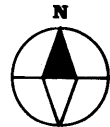
KEY

BASIC NETWORK

- 14" PIPES
- 12" PIPES
- 10" PIPES
- 8" PIPES
- MANHOLES

BLOCK NETWORK

- 8" PIPES
- 6" PIPES
- 4" PIPES
- MANHOLES



0 100 500m
1:10000

SEWAGE DISPOSAL: BASIC NETWORK

	Length	%	M/Ha
PIPES	8"	5578	76.6
	10"	440	6.1
	12"	880	12.1
	14"	380	5.2
Total	7278m	100.0	58.5
Number			
MANHOLES	130	-	1.04

STORM DRAINAGE

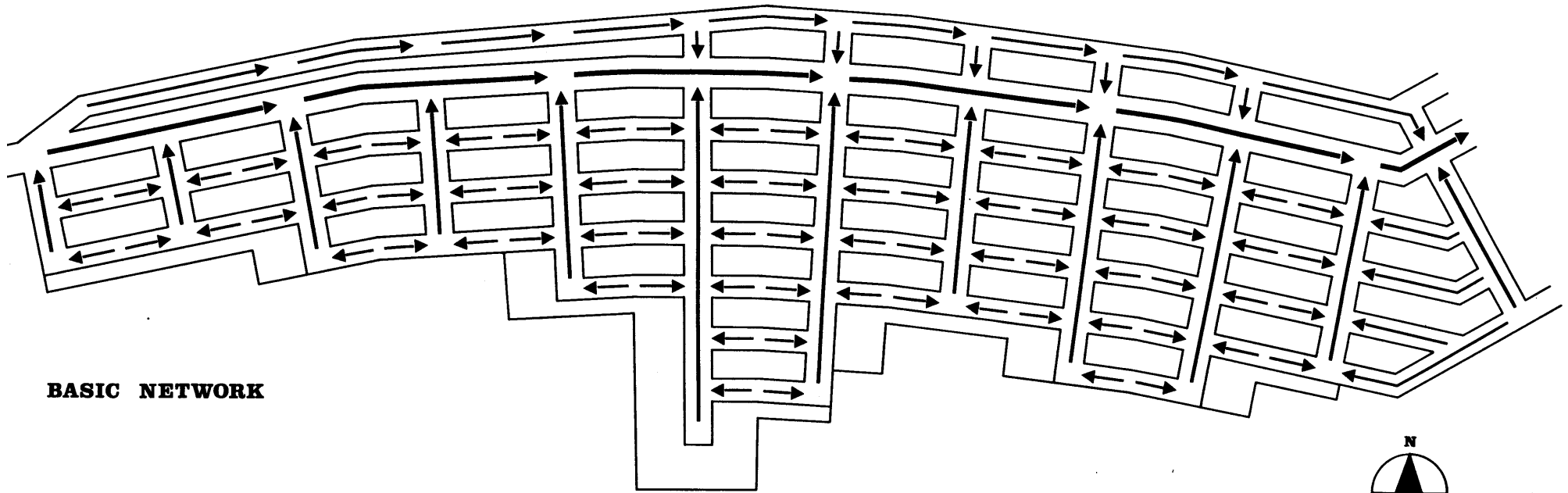
The storm drainage for the site has been designed at a minimum level with the streets and courts as primary drainage interceptors and shallow street ditches and gutters as flow collectors.

The secondary streets, which run perpendicular to the contours, are used as main interceptors. They accommodate shallow ditches designed into the surface paving along the sides. This allows for economy in construction, easy maintenance and facilitates utilization of the street.

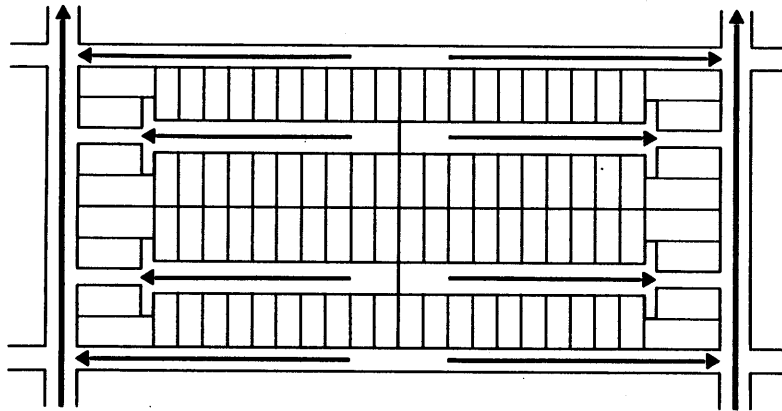
The tertiary connecting streets, which slope less than 1% accommodate shallow depressions in the center of the surface paving.

Gutters are provided as flow collectors only along the main street which eventually collects all the surface water of the site. The main street flow collector system will eventually be connected to the future municipality network, but until then it will drain to Liosiou Ravine and from there to Kifisos drain.

STORM DRAINAGE NETWORK



BASIC NETWORK



BLOCK NETWORK



KEY

→ DIRECTION OF SURFACE DRAINAGE

CIRCULATION: BASIC NETWORK

		Width	Length	%	M/Ha
STREETS	I	7m	8545	46.1	68.7
	II	10m	7624	41.1	61.3
	III	15m	2370	12.8	19.0
	Total		18539m	100.0	149.0

ELECTRICITY / STREET LIGHTING

The network has been designed at a standard level which assumes that power is provided to individual lots and street lighting occurs at each electrical pole.

The internal network is connected to the existing municipality transmission line along the main street. A sub-station installed at the entrance to the site by the main street provides power to the internal high tension network.

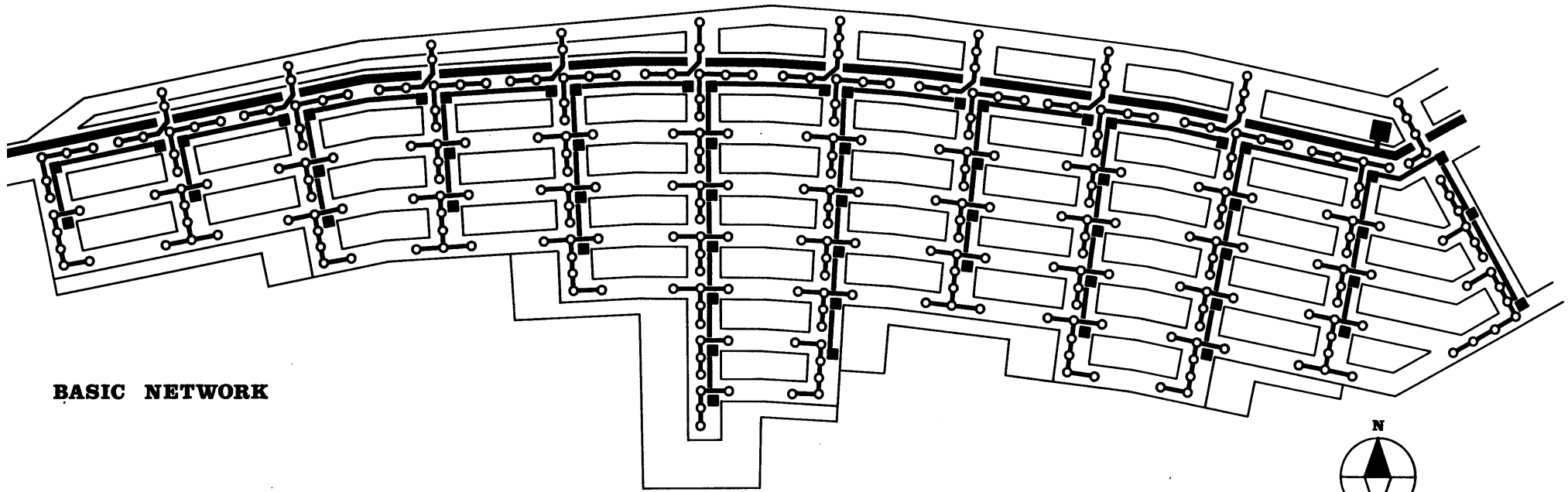
The primary high tension lines are located along the main commercial streets and secondary residential streets. Transformers are located along the high tension lines at places which will insure a maximum length of 150m. for the low tension circuits with a voltage drop of 5v. The transformers used are all of the same capacity by introducing uniform distribution loads in the low tension circuits. Each one has a capacity of 150 CVA and serves 2 clusters (50 lots) assuming a demand of 3 KVA per lot (1.5 KVA per dwelling)

Poles are located along the main street at an average spacing of 45m, including all intersections, to provide street lighting and service connections to the commercial lots. Poles are also located along the secondary streets at the entrance of each cluster, to facilitate service connections to the individual lots, and at all intersections for street lighting. A limited number is provided on the tertiary streets strictly for street lighting.

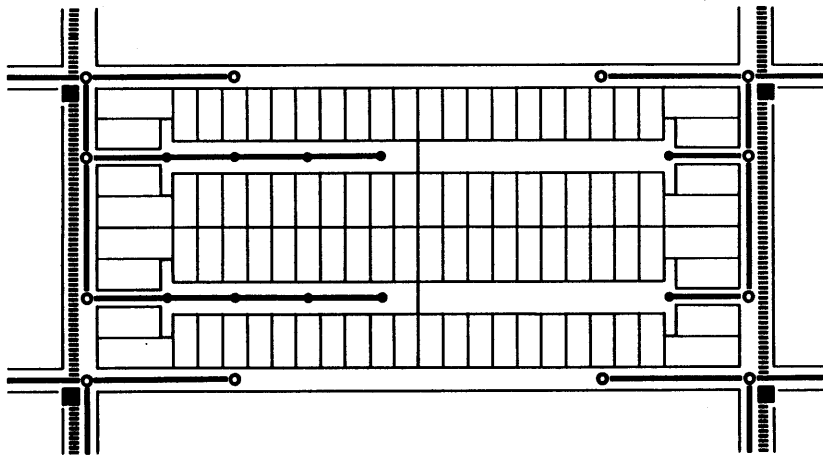
Service drops are provided for each cluster of lots, at a maximum distance of 30m. Consumption is metered individually or collectively. One service drop and meter can serve an entire cluster of lots to optimize initial equipment cost.

The proposed electricity and street lighting network layout allows for a staged development of the network, to reduce the initial cost without compromising the level of service provided.

ELECTRICITY/STREET LIGHTING NETWORK



BASIC NETWORK



BLOCK NETWORK

KEY

BASIC NETWORK

- SUBSTATION
- TRANSFORMERS
- TRANSMISSION LINE
- HIGH TENSION CABLES
- LOW TENSION CABLES
- POLES/LAMPS

BLOCK NETWORK

- TRANSFORMERS
- HIGH TENSION CABLES
- LOW TENSION CABLES
- SERVICE DROPS
- POLES/LAMPS

0 100 500m
1:10000

ELECTRICITY AND STREET LIGHTING: BASIC NETWORK

	Number	%	U/Ha
TRANSFORMERS: 150 KVA	57	-	0.5
	Length	%	M/Ha
CABLES: High Tension	5960	37.4	48.0
Low Tension	9995	62.5	80.3
Total	15962m	100.0	128.3
	Number	%	U/Ha
POLES	306	-	2.5
LAMPS	306	-	2.5
SERVICE CONNECTIONS	227	-	1.8

LAND UTILIZATION: PATTERNS, PERCENTAGES, DENSITIES

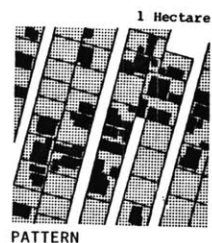
PATTERNS

The layout patterns represent one hectare of land and indicate the land utilization and circulation pattern of the presented case studies.

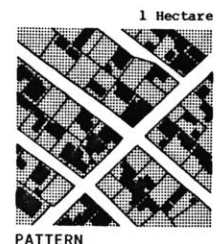
1 PLAKOUDA, PERAMA



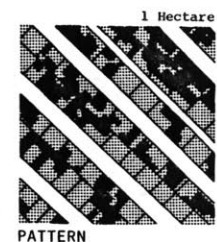
2 ZOFRIA, ANO LIOSIA



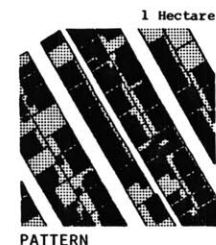
3 MESONISI, BRACHAMI



4 TAXIARCHIS, BRACHAMI



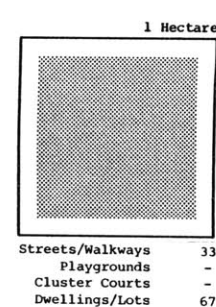
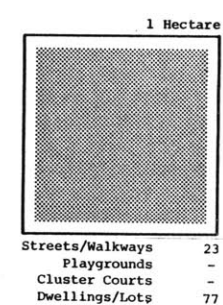
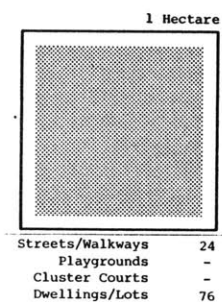
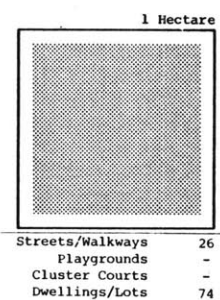
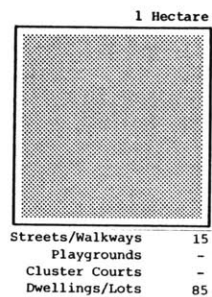
5a ANTHEON, BRACHAMI



PERCENTAGES

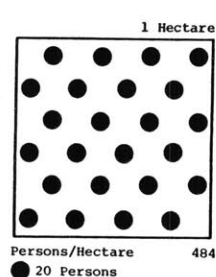
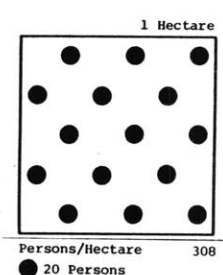
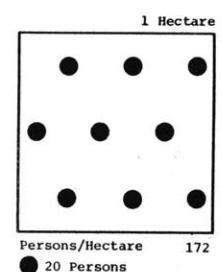
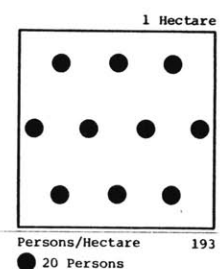
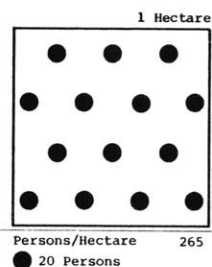
The diagrams represent land utilization percentages in one hectare of residential land, computed for the following areas:

- a) PUBLIC: streets, walkways, open spaces
- b) SEMI-PUBLIC: community facilities, open spaces
- c) PRIVATE: dwellings, lots
- d) SEMI-PRIVATE: cluster courts.



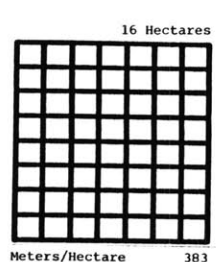
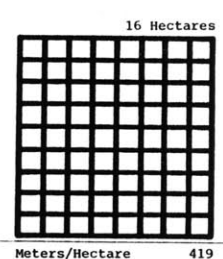
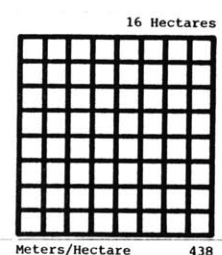
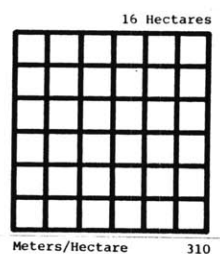
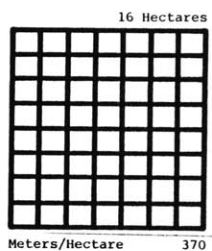
DENSITIES

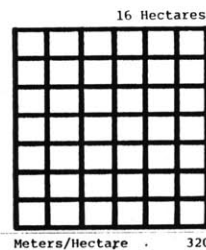
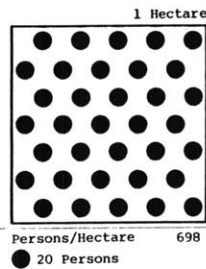
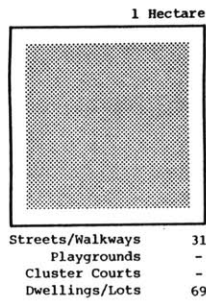
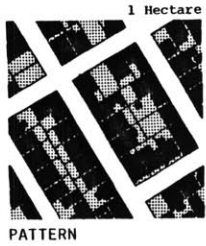
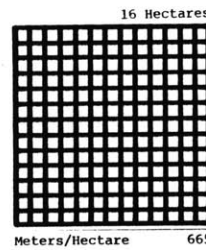
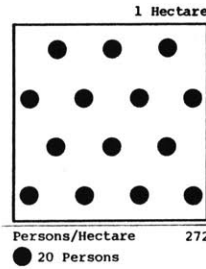
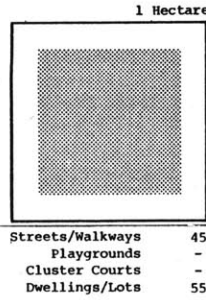
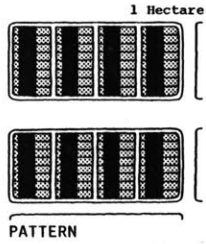
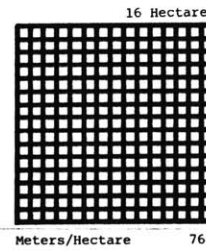
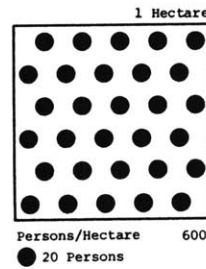
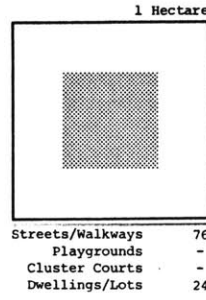
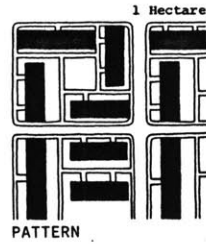
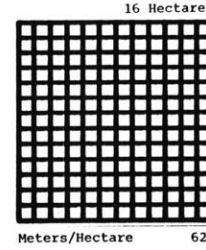
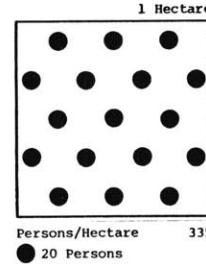
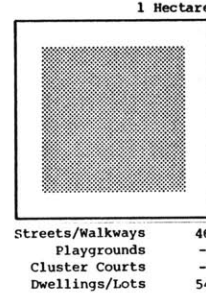
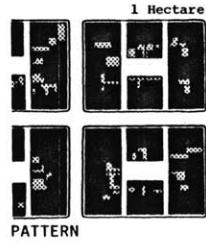
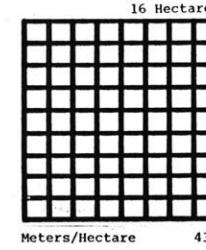
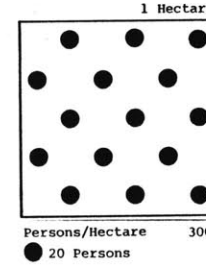
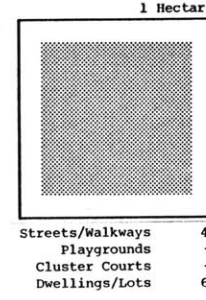
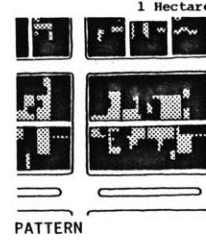
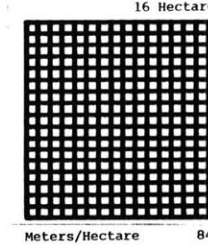
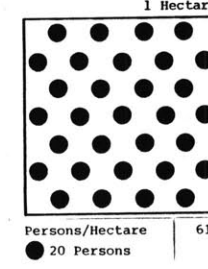
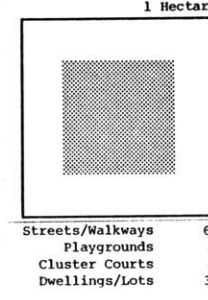
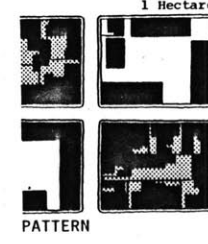
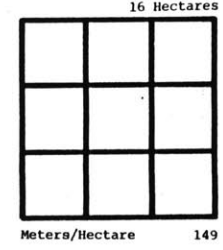
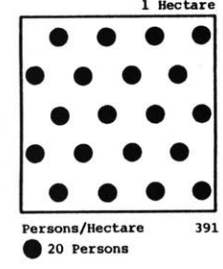
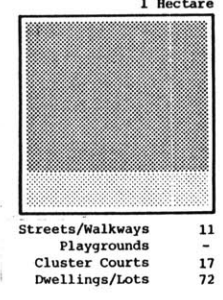
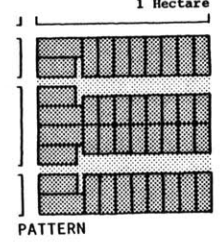
The diagrams represent residential population densities for one hectare of land, (total number of persons per hectare), indicating the intensity of land use.



CIRCULATION EFFICIENCY

The diagrams represent the circulation intervals/block dimensions in a land segment of 16 hectares and indicate the circulation efficiency (length of circulation network per area served) measured in unit circulation length (m/Ha).



**5b ANTHEON.
BRACHAMI**

6a DRAPETSONA

6b DRAPETSONA

**7a PROSFIGIKA.
KESARIANI**

**7b PROSFIGIKA.
KESARIANI**

**7c PROSFIGIKA.
KESARIANI**

**8 PROPOSED
MODEL**


PHYSICAL DATA MATRIX

			POPULAR SECTOR					PUBLIC SECTOR	
LOCALITIES Settlement Type			PLAKOUDA, PERAMA Squatter Settlement	ZOFRIA ANO LIOSIA Illegal Settlement	MESONISI, BRACHAMI Popular Settlement	TAXIARCHIS, BRACHAMI Popular Settlement	ANTHEON, BRACHAMI Popular Settlement	DRAPETSONA Public Housing	PROSPIGIKA, KESARIANI Refugee Settlement
USER	Income	Low Moderately Low Middle							
	Type	Shanty House Apartment							
DWELLING UNIT	Area	50m ² or less 51 - 100m ² 101m ² or more							
	Tenure	Legal Ownership Legal Rental							
LAND/LOT	Utilization	Public Semi-Public Private Semi-Private							
	Tenure	Extralegal: ownership Extralegal: rental Legal: ownership Legal: rental							
DWELLING	Location	Periphery Inner Ring City Center							
	Type	Detached Semi-Detached Row/Grouped Walk-up High-rise							
	No. Floors	1 2 3 or more							
	Utilization	Single Multiple							
	Physical state	Bad Fair Good							
DWELLING DEVELOPMENT	Mode	Incremental Instant							
	Developer	Popular Public Private							
	Builder	Self Help Small Contractor Large Contractor							
	Construction Type	Shack Masonry/wood Masonry/Concrete Concrete							
	Date	Year of Construction Year of Annexation	1974 -	1960 -	1955 -	1955 1972	1950 1959	1963 1963	1922 1922
LOCALITIES			PLAKOUDA, PERAMA	ZOFRIA ANO LIOSIA	MESONISI, BRACHAMI	TAXIARCHIS, BRACHAMI	ANTHEON, BRACHAMI	DRAPETSONA	PROSPIGIKA, KESARIANI

COMMUNITY FACILITIES, UTILITIES/SERVICES MATRIX

		POPULAR SECTOR					PUBLIC SECTOR	
LOCALITIES Settlement Type		PLAKOUDA, PERAMA Squatter Settlement	ZOFRIA ANO LIOSIA Illegal Settlement	MESONISI, BRACHAMI Popular Settlement	TAXIARCHIS, BRACHAMI Popular Settlement	ANTHEON, BRACHAMI Popular Settlement	DRAPETSONA Public Housing	PROSPIGIKA, KESARIANI Refugee Settlement
COMMUNITY FACILITIES	Schools, Playgrounds							
	Recreation							
	Health							
	Fire Protection							
	Police							
UTILITIES AND SERVICES	Water							
	Sewerage							
	Storm Drainage							
	Electricity							
	Refuse Collection							
	Public Transportation							
	Paved Roads, Walkways							
	Telephone							
	Street Lighting							
	Year of Construction Year of Annexation	1974 -	1960 -	1955 -	1955 1972	1950 1959	1963 1963	1922 1922
LOCALITIES		PLAKOUDA, PERAMA	ZOFRIA ANO LIOSIA	MESONISI, BRACHAMI	TAXIARCHIS, BRACHAMI	ANTHEON, BRACHAMI	DRAPETSONA	PROSPIGIKA, KESARIANI

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QUALITY OF SERVICES, FACILITIES AND UTILITIES

None: When services, facilities and utilities are
unavailable to a locality.

Limited: When services, facilities and utilities are
available to a locality in a limited manner
due to proximity.

Adequate: When services, facilities and utilities are
available in/to a locality

QUALITY OF INFORMATION

The information given in the drawings has been quali-
fied in the following manner:

Tentative: When based upon rough estimations of
limited sources.

Approximate: When deduced from different and/or not
completely reliable sources.

Accurate: When taken from reliable sources.

METRIC SYSTEM EQUIVALENTS

1 centimeter	= 0.3937 inches
1 meter = 100 centimeters	= 3.28 feet
1 kilometer = 1,000 meters	= 0.62137 miles
1 inch	= 2.54 centimeters
1 foot	= 0.3048 meters
1 mile	= 1.60935 kilometers
1 square meter	= 10.7639 square feet
1 hectare = 10,000 sq. meters	= 2.4711 acres
1 square foot	= 0.0929 sq. meters
1 acre	= 0.4087 hectares

DOLLAR EQUIVALENTS

1 U.S. Dollar = 55 drachmas (May, 1981)