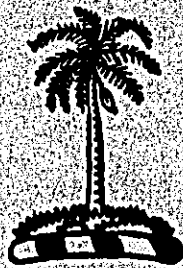


URBAN TRANSPORT STUDY
IN
GREATER METROPOLITAN AREAS
OF
GEORGETOWN, BUTTERWORTH AND BUKIT MERTAJAM
MALAYSIA

LAND USE STUDY

OUTER RING ROAD PROJECT (PHASE II)

TECHNICAL REPORT - 01



MARCH 1981

**JAPAN INTERNATIONAL
COOPERATION AGENCY**

**GOVERNMENT OF
MALAYSIA**



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GEORGE TOWN, BUTTERWORTH AND BUKIT MERTAJAM
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LAND USE STUDY

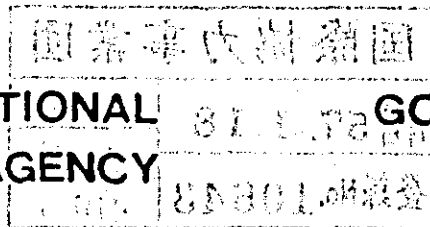
OUTER RING ROAD PROJECT (PHASE II)

TECHNICAL REPORT - 01

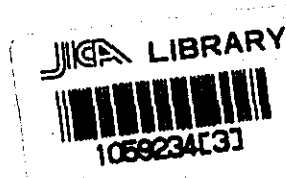


MARCH 1981

JAPAN INTERNATIONAL
COOPERATION AGENCY



GOVERNMENT OF
MALAYSIA



URBAN TRANSPORT STUDY

IN

GREATER METROPOLITAN AREA

OF

THE TOWN OF BUTTERWORTH AND BUKIT MERBAH

MALAYSIA

LAND USE STUDY

(I) TRANSPORT ZONING AND PROJECT (PHASE I)

BY



INTERNATIONAL COOPERATION ASSOCIATION

TO THE MEMBERS
OF THE ASSOCIATION

| | |
|--------------------|--------|
| 国際協力事業団 | |
| 受入 月日 578415.18 | 1/30 |
| 登録No. 040623 | 67.41 |
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INTERNATIONAL
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CONTENTS

| | | |
|-------|---|----|
| 1. | Existing Land Use | 1 |
| 1.1 | General | 1 |
| 1.1.1 | Existing Land Use of the State | 1 |
| 1.1.2 | Existing Land Use of George Town | 3 |
| 1.2 | Residential Area | 5 |
| 1.2.1 | Identification of Residential Area in George Town | 5 |
| 1.2.2 | Population Density | 5 |
| 1.3 | Commercial Area | 10 |
| 1.4 | Land Use by Traffic Zones | 12 |
| 2. | Future Land Use | 19 |
| 2.1 | Land Use Plan | 19 |
| 2.2 | Major Changes in George Town | 19 |
| 2.3 | Land Use by Traffic Zones | 20 |
| 3. | Development Pressure | 20 |
| 3.1 | Development Scheme | 20 |

LIST OF TABLES

| | | |
|-----------|--|----|
| Table 1.1 | Existing Land Use Area Size----- | 1 |
| Table 1.2 | Dwelling Units in Penang Island----- | 8 |
| Table 1.3 | Monthly Household Income Distribution----- | 9 |
| Table 1.4 | Existing Land Use----- | 13 |
| Table 2.1 | Future Land Use Area Size----- | 19 |
| Table 2.2 | Land Use of Zone 1----- | 20 |

LIST OF FIGURES

| | | |
|----------|--|----|
| Fig. 1.1 | Schematic Map of Land Use ----- | 3 |
| Fig. 1.2 | Existing Land Use Map ----- | 4 |
| Fig. 1.3 | Density of Residential Areas ----- | 7 |
| Fig. 1.4 | Location Structure of Commercial Areas ----- | 10 |
| Fig. 1.5 | Traffic Zones ----- | 17 |
| Fig. 1.6 | Distribution of Commercial Centres ----- | 18 |
| Fig. 3.1 | Development Pressure along Jalan Northam ----- | 21 |
| Fig. 3.2 | Existing and Future Development Along Proposed Roads ----- | 23 |
| Fig. 3.3 | Development Plan by P.D.C ----- | 24 |

- 1.
- 1.1
- 1.1.1

Existing Land Use

General

Existing Land Use of the State

According to the Phase One Study, the present area size devoted to the different types of land use is roughly as follows:-

Table 1.1 EXISTING LAND USE AREA SIZE

| <u>Land Use</u> | <u>Penang Island*</u> | | <u>Province Wellesley*</u> | |
|-----------------------|-----------------------|--------------|----------------------------|--------------|
| | (ha.) | (%) | (ha.) | (%) |
| Residential | 2,700 | (18.4) | 3,180 | (14.4) |
| Commercial | 400 | (2.7) | 3,180 | (14.4) |
| Institutional | 390 | (2.7) | | |
| Industrial | 360 | (2.5) | 1,510 | (6.9) |
| Open Space and Others | 10,850 | (73.7) | 17,340 | (78.7) |
| Total | 14,700 | (100) | 22,030 | (100) |

Note : () in percentage
* study area only

The characteristics of general land use within the study area can be described as follows:-

1. Most of George Town is made up of built-up areas except for the mountainous terrain in its vicinity. The population density in George Town is more than 124 persons per hectare.
2. In other areas in Penang Island, there are still many areas of undeveloped and under-developed land. At present, the areas in Bayan Lepas are in the process of development by the Penang Development Cooperation (PDC).
3. In Province Wellesley, there exists extensive good agricultural land, especially padi land. Some of the areas in and around the vicinity of Butterworth are already developed. However, the other areas are now in the process of being developed.

The C.B.D. of George Town is the largest emporium in the northern part of Peninsular Malaysia and its major functions are composed of businesses relating to the Port of Penang and of shopping facilities corresponding to the size of demand of the region.

The gross population density of George Town is about 120 persons per hectare which is the highest density in the State of Penang and in the C.B.D. it sometimes exceed 300 persons per hectare. What we call the "doughnut phenomena" has not yet been observed here since the central area is a mixture of residential and commercial use.

Old and low density residential areas which contributes to a good environment is located mainly in the north part of the town while the south part of the town formulates a high density built-up area with a mixture of residential and commercial areas and small-scale industries.

1.1.2

Existing Land Use of George Town

The characteristics of land use in George Town is illustrated schematically in the following figure.

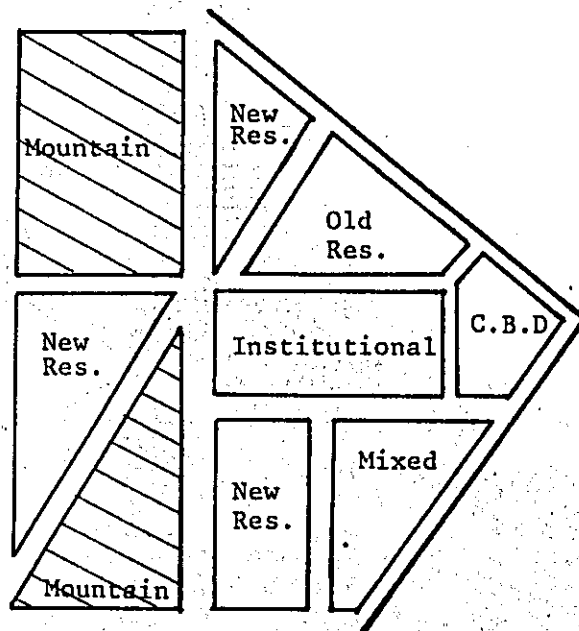


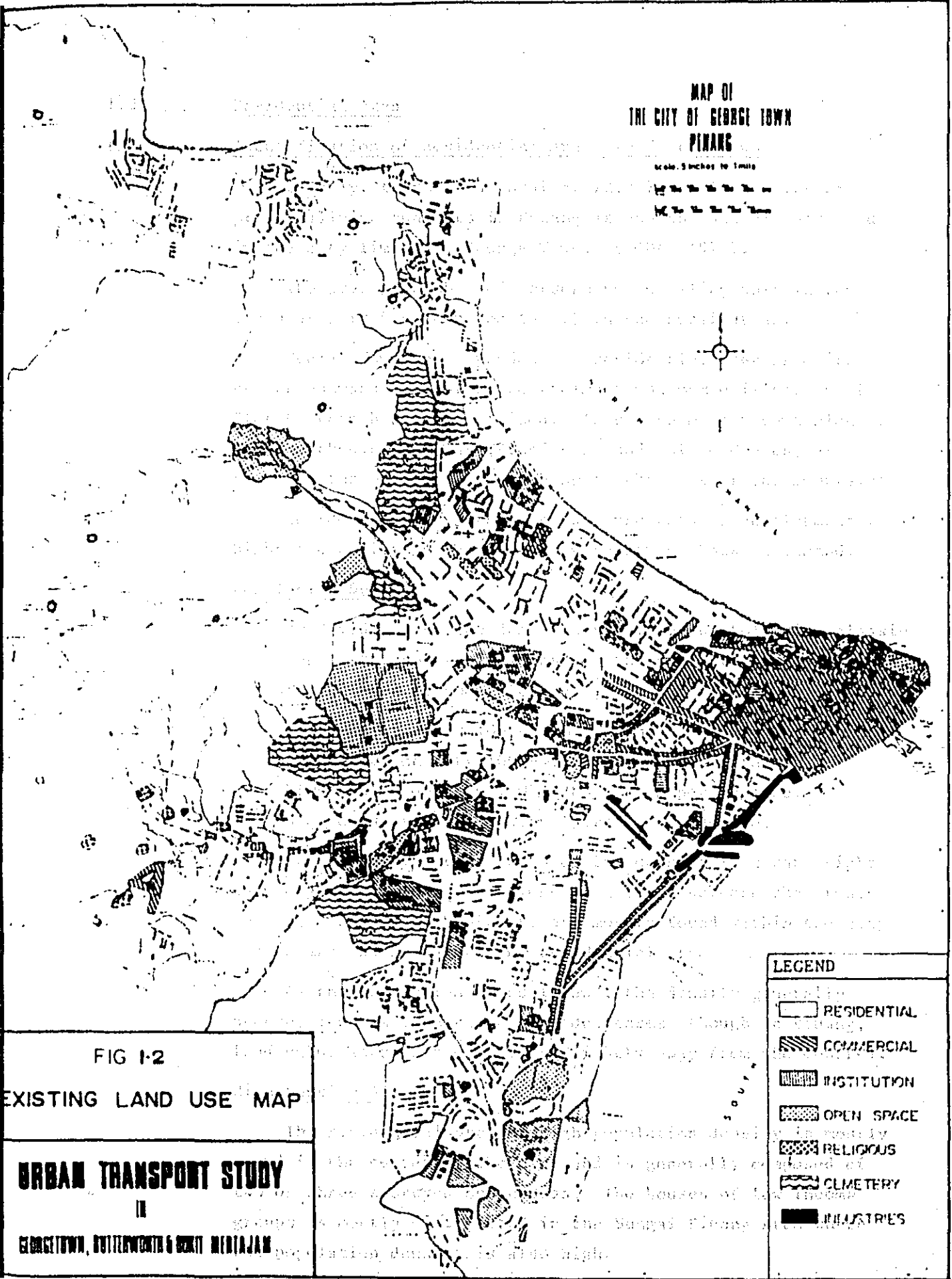
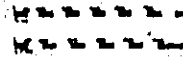
Fig. 1.1 SCHEMATIC MAP OF LAND USE

As a whole, the shape of the town is a triangle projecting out to the sea and the hinterland is surrounded by steep hills. Urbanization has developed from the tip of the triangle and at present almost all vacant spaces suitable for development are urbanized. Therefore, a housing development scheme has been activated in the suburbs of the town such as Ayer Itam, Glugor and Bayan Baru in order to meet continuous housing demand.

Also within the central area of the town the development of high-rise buildings for commercial and residential purposes can be often observed.

MAP OF
THE CITY OF GEORGE TOWN
PENANG

Scale: 3 inches to 1 mile



| LEGEND | |
|--------|-------------|
| | RESIDENTIAL |
| | COMMERCIAL |
| | INSTITUTION |
| | OPEN SPACE |
| | RELIGIOUS |
| | CEMETERY |
| | INDUSTRIES |

FIG 1-2
EXISTING LAND USE MAP
URBAN TRANSPORT STUDY
II
GEORGETOWN, BUTTERWORTH & BUKIT MERIAJAM

1.2

Residential Area

1.2.1

Identification of Residential Areas in George Town

Briefly, there is a total of 72,217 dwelling units or private living quarters in Penang Island and 48% are situated in the city limits of George Town. (NIDAS 1979).

The average number of persons per dwelling unit in the urban area is 9.6 compared to 4.3 in the rural areas.

George Town has expanded its residential area from its center outwards and at present almost maximum utilization of flat terrain has been attained. Therefore most recent planned neighbourhoods, such as Island Park and Island Glades, are found in the outskirts stretching to the foot of the mountains.

Inside the city, urban renewal projects or development of high-rise buildings supply the over-growing housing demand.

1.2.2

Population Density

By dividing the residential area into the following classification of the population density, the characteristics of each residential area becomes clearer.

Low density below 100 person per hectare.

Low medium density 100 - 500 person per hectare.

High medium density 150 - 200 person per hectare.

High density 200 and above person per hectare.

It is observed that areas of low density is a rare sight in George Town. However, there is a clear pattern that residential areas of high density are mostly found within the city centre and the Sungai Pinang residential area.

As the population moves inland, the density generally becomes less as land value also decreases (though in Penang, land value decreases only very slightly away from the centre).

High Density Area

The residential area of high population density is mostly found in the center of the city and is generally composed of two or three storeyed shophouses. The houses of low income groups is mostly distributed in the Sungai Pinang Area where the population density is also high.

Medium Density Area

This area is mostly occupied by the middle class residential area which is usually located just outside of the city center.

Low Density Area

Low density and Low Medium density area are located at the fringe of the city and is composed of two types of houses. One is colonial styled buildings which are still structurally sound and unique in both design and structure.

These buildings give scenic character to the city and contributes to tourist interest. An example would be the Kedah House and the Suffolk House. The other is new houses developed through private housing schemes, sited at the fringe of the city.

URBAN TRANSPORT STUDY

IN

GEORGETOWN, BUTTERWORTH & BUKIT MERTAJAM

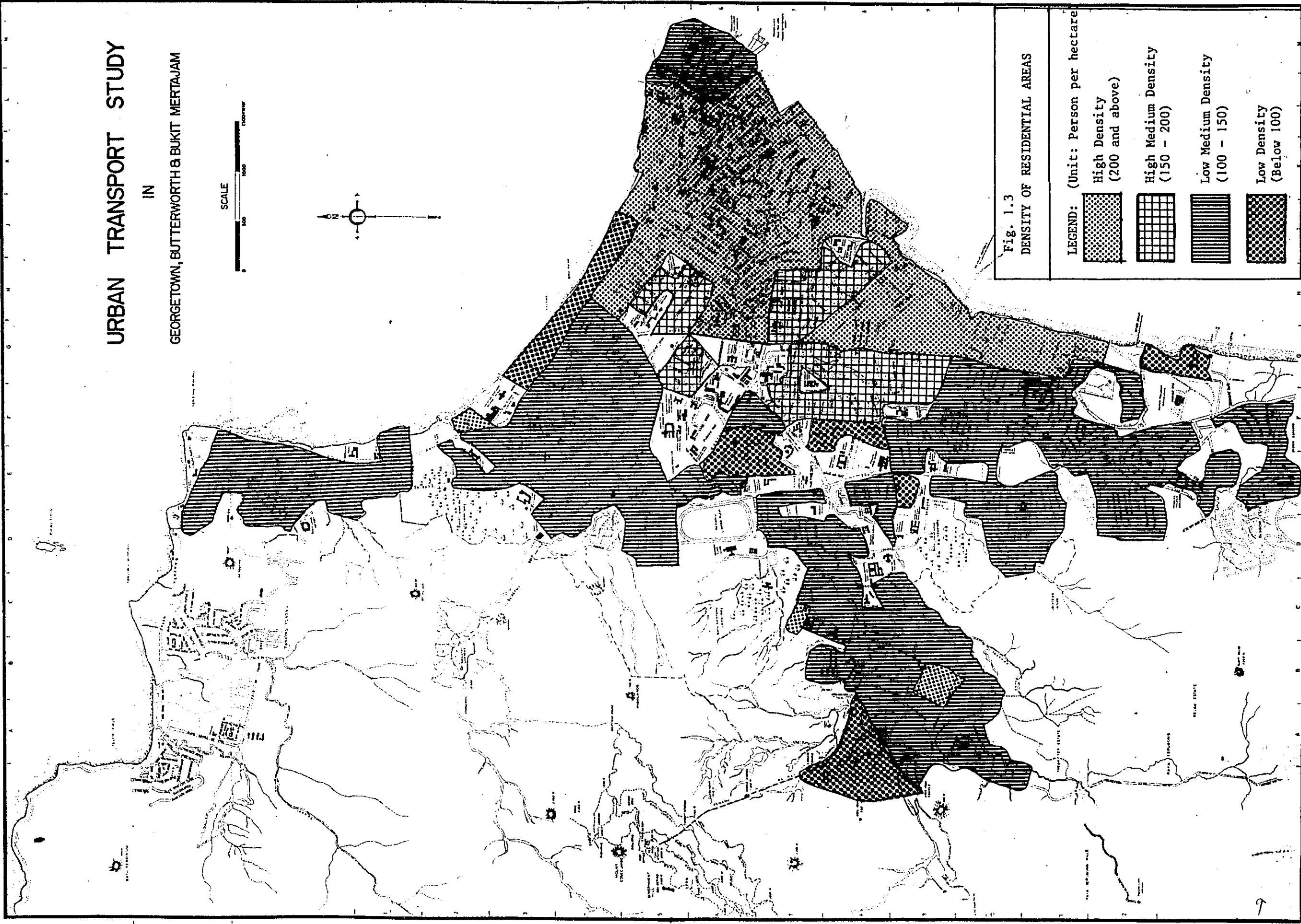
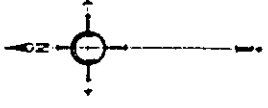


Fig. 1.3
DENSITY OF RESIDENTIAL AREAS

LEGEND: (Unit: Person per hectare)

| | |
|--|------------------------------------|
| | High Density (200 and above) |
| | High Medium Density (150 - 200) |
| | Low Medium Density (100 - 150) |
| | Low Density (Below 100) |

Table 1.2 DWELLING UNITS IN PENANG ISLAND

| TRAFFIC ZONE | POPULATION | NO. OF DWELLING UNITS | ACREAGE (HAC) | DWELLINGS UNITS PER HAC. |
|--------------|------------|-----------------------|---------------|--------------------------|
| 091 | 7103 | 830 | N.A | N.A |
| 092 | 11097 | 1689 | N.A | N.A |
| 093 | 11959 | 2629 | N.A | N.A |
| 094 | 12555 | 1916 | N.A | N.A |
| 111 | 37814 | 5994 | 150.1 | 39.93 |
| 121 | 17681 | 2507 | 94.0 | 26.67 |
| 122 | 13840 | 2494 | 228.0 | 10.94 |
| 123 | 8782 | 1500 | 206.0 | 7.28 |
| 124 | 10325 | 1975 | 285.0 | 6.93 |
| 125 | 13423 | 2394 | 143.0 | 16.74 |
| 131 | 63480 | 7898 | 302.0 | 26.15 |
| 132 | 33842 | 5240 | 256.0 | 20.47 |
| 133 | 35740 | 4726 | 234.0 | 20.20 |
| 141 | 6858 | 1157 | 395.0 | 2.93 |
| 142 | 15229 | 2627 | 302.0 | 8.70 |
| 143 | 35076 | 6822 | 181.0 | 37.69 |
| 211 | 9661 | 2183 | N.A | N.A |
| 212 | 9245 | 1549 | N.A | N.A |
| 221 | 2396 | 442 | N.A | N.A |
| 311 | 1719 | 376 | N.A | N.A |
| 321 | 21368 | 3443 | 743.5 | 7.29 |
| 322 | 1660 | 304 | N.A | N.A |
| 323 | 0 | 0 | N.A | N.A |
| 331 | 19852 | 4138 | 403.0 | 8.23 |
| 332 | 1859 | 280 | 563.0 | 0.50 |
| 333 | 8283 | 1619 | 151.0 | 10.72 |

| TRAFFIC ZONE | POPULATION | NO. OF DWELLING UNITS | ACREAGE (HAC) | DWELLING UNITS PER HAC. |
|--------------|------------|-----------------------|---------------|-------------------------|
| 334 | 2173 | 344 | 885.0 | 0.39 |
| 335 | 523 | 172 | N.A | N.A |
| 411 | 12090 | 2261 | 194.0 | 11.65 |
| 412 | 9298 | 1554 | 169.0 | 9.20 |
| 413 | 6096 | 1154 | 183.9 | 6.31 |
| TOTAL | 441038 | 72217 | | |

Note: N.A = Not Available

SOURCE : NIDAS 1977

TABLE: 1.3
MONTHLY HOUSEHOLD INCOME DISTRIBUTION
PENANG STATE : 1977

| Income Categories Area | M\$1-99 | M\$100-199 | M\$200-299 | M\$300-399 | M\$400-499 | M\$500-799 | M\$800-1499 | M\$1500 and above | AVERAGE HOUSEHOLD INCOME |
|---------------------------|---------|------------|------------|------------|------------|------------|-------------|-------------------|--------------------------|
| | % | % | % | % | % | % | % | | |
| STATE OF PENANG | 9.05 | 19.24 | 23.29 | 16.03 | 9.47 | 11.17 | 7.69 | 4.07 | M\$427 |

SOURCE : NIDAS 1977

1.3

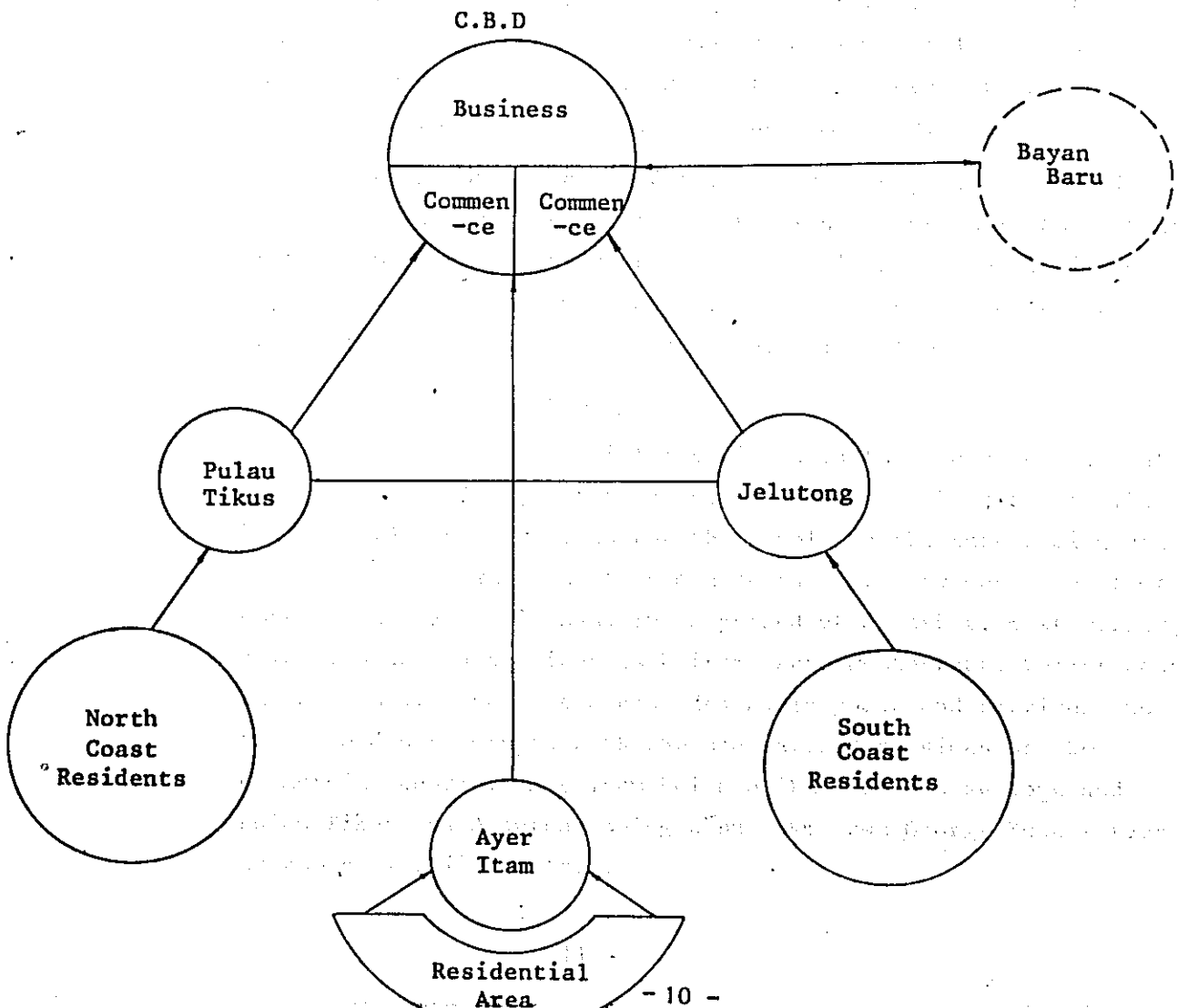
Commercial Area

The analysis of the existing commercial and services situation is greatly limited by lack of up-to-date data. However, the three district centres of Air Itam, Jelutong and Pulau Tikus play important roles in commercial activities within the city limits of George Town. Together, they are the only centres where all the categories of commercial and services exist.

And these commercial areas are located strategically corresponding to the population spread and the shape of the town.

The following schematic map shows the location structure of the commercial areas.

Fig.1.4 LOCATION STRUCTURE OF COMMERCIAL AREAS



Three main levels of commercial and service centres may be spatially indicated in George Town. The number and range of commercial activities determine the type of functions of the centres.

(a) Commercial Centre

George Town can be classified as the commercial centre for Penang Island because it has the largest number of wholesale, retail, catering and service establishments. The center of George Town, with an area size of 200 hectares, not only caters for its local population but also acts as an import and export centre for overseas goods. It also acts as the main distribution centre serving the whole of Northern Peninsula Malaysia. It is characterized by multi-storey offices and shopping complexes.

Most activated retail trade areas are located in Penang Road and Jalan Burma and the emporium of the area has moved from the commercial area along Penang Road to the nearby Magazine Circus where the Komtar Project is being undertaken. On the other hand, major wholesalers distribute near to the port, such as along Leboh Pantai. Most offices concentrate in the vicinity of the Bangunan (State Government Building).

There are still shops of the two or three storey traditional type where business is carried on the shop front while the family stays at the rear portion or at the top floor. A complexity of sophisticated public and professional services demarcates the commercial centre from the sub-commercial centres.

(b) Sub-Commercial Centres

The level of commercial activities in these centres consist mainly of retailing, catering and services for the needs of the local residents as well as for the people in the surrounding areas within George Town. The town centre is served by more than fifty establishments and is usually comprised of a market, post office, clinic, bank and services as hairdresser, restaurant, tailor shop and workshop. The centre provides basic goods and services and this could not compete with the specialised services of the commercial centre. Air Itam being 6.5km from George Town and Pulau Tikus and Jelutong being about 3km from George Town serves as sub-commercial centres.

(c) Centres in Housing Estates

This category of commercial and service centres are usually served by about ten to twenty establishments. They cater for the needs of the local residents and mainly utilise their own financial resources as well as members of the families to run the business. The commercial activities in these centres mainly consist of providing for the daily needs of the residents. Thus, the number of commercial units will increase with the increase in number of houses in the estate. For example, Island Park has twelve establishments to serve the residents while Island Glades has 24 establishments and a market that caters for the population as well as the nearby housing estates.

1.4

Land Use by Traffic Zones

The existing land use was measured by each traffic zones in the Phase One Study and by subdivided traffic zones in the Phase Two Study.

The result of this measurement in this study is shown in the following table.

Table 1.4 EXISTING LAND USE

| ZONE | SUB ZONE | RESID. | COMM. | IND. | INSTIT. | OPEN SPACE | OTHERS | TOTAL (has) |
|------|----------|--------|-------|------|---------|------------|--------|--------------------|
| 111 | | 9 | 132 | 6 | 2 | 1 | 0 | 150.1 |
| | 01 | - | 19.3 | 4 | - | - | - | 25.3 |
| | 02 | 4.0 | 40.1 | - | - | 1 | - | 45.1 |
| | 03 | 5.0 | 41.9 | 2 | - | - | - | 48.9 |
| | 04 | - | 30.3 | - | - | - | - | 30.3 |
| 121 | | 53.0 | 30.0 | 0 | 9.0 | 2.0 | 0 | 94.0 ⁶⁴ |
| | 01 | 23.1 | 12.0 | 0 | 9.0 | 2.0 | 0 | 46.1 |
| | 02 | 29.9 | 18.0 | 0 | - | - | 0 | 47.9 |
| | | | | | | | | |
| 122 | | 203.0 | 9.0 | 0 | 9.0 | 2.0 | 0 | 223.0 |
| | 01 | 58.8 | - | - | - | - | - | 58.8 |
| | 02 | 33.3 | - | - | 9.0 | - | - | 42.3 |
| | 03 | 56.4 | - | - | - | - | - | 56.4 |
| | 04 | 59.5 | 9.0 | - | - | 2.0 | - | 70.5 |
| 123 | | 136.0 | 0 | 0 | 41.0 | 29.0 | 0 | 206.0 |
| | 01 | 58.0 | 0 | 0 | 20.0 | 20.0 | - | 98.0 |
| | 02 | 17.9 | 0 | - | 21.0 | 9.0 | - | 47.9 |
| | 03 | 60.2 | - | - | - | - | - | 60.2 |
| | | | | | | | | |
| 124 | | 194.0 | 1.0 | - | 10.0 | 0 | 80.0 | 285.0 |
| | 01 | 46.9 | 1.0 | - | 10.0 | - | 52.0 | 109.5 |
| | 02 | 74.5 | - | - | - | - | - | 74.5 |
| | 03 | 72.6 | - | - | - | - | 23.0 | 100.6 |
| | | | | | | | | |

EXISTING LAND USE

| ZONE | SUB ZONE | RESID. | COMM. | IND. | INSTIT. | OPEN SPACE | OTHERS | TOTAL (has) |
|------|----------|--------|-------|------|---------|------------|--------|-------------|
| 125 | | 120.0 | 0 | 0 | 0 | 0 | 23.0 | 143.0 |
| | 01 | 56.0 | - | - | - | - | - | 56.0 |
| | 02 | 64.0 | - | - | - | - | 23.0 | 87.0 |
| | | | | | | | | |
| | | | | | | | | |
| 131 | | 211.0 | 0 | 74.0 | 14.0 | 3.0 | 0 | 302.0 |
| | 01 | 16.5 | - | 33.0 | 6.0 | 3.0 | - | 63.5 |
| | 02 | 33.7 | - | 16.0 | 2.0 | - | - | 106.7 |
| | 03 | 57.5 | - | 15.0 | - | - | - | 72.5 |
| | 04 | 13.3 | - | 5.0 | 6.0 | - | - | 59.3 |
| 132 | | 159.1 | 0 | 0 | 63.1 | 0 | 13.3 | 256.0 |
| | 01 | 44.6 | - | - | 32.9 | - | - | 77.5 |
| | 02 | 36.1 | - | - | - | - | 4.7 | 40.3 |
| | 03 | 57.1 | - | - | 9.4 | - | - | 66.5 |
| | 04 | 31.2 | - | - | 25.3 | - | 14.1 | 71.1 |
| 133 | | 201.0 | 0 | 2.0 | 31.0 | 0 | 0 | 234.0 |
| | 01 | 61.7 | - | - | - | - | - | 61.7 |
| | 02 | 36.3 | - | - | - | - | - | 36.3 |
| | 03 | 55.3 | - | - | 31.0 | - | - | 86.8 |
| | 04 | 47.2 | - | 2.0 | - | - | - | 49.2 |
| 141 | | 66.0 | 0 | 0 | 6.0 | 90.0 | 263.0 | 395.0 |
| | 01 | 28.1 | - | - | - | 56.0 | 74.0 | 158.2 |
| | 02 | 37.8 | - | - | 6.0 | 4.0 | 189.0 | 236.8 |
| | | | | | | | | |
| | | | | | | | | |

EXISTING LAND USE

| ZONE | SUB ZONE | RESID. | COMM. | IND. | INSTIT. | OPEN SPACE | OTHERS | TOTAL (has) |
|------|----------|--------|-------|------|---------|------------|--------|-------------|
| 142 | | 125.7 | 2.0 | 1.0 | 59.0 | 0 | 103.7 | 302.0 |
| | 01 | 57.6 | - | - | - | - | - | 57.6 |
| | 02 | 72.1 | 2.0 | - | - | 59.0 | 56.0 | 156.1 |
| | 03 | 88.3 | - | - | - | - | - | 88.3 |
| 143 | | 119.0 | 5.0 | 0 | 0 | 0 | 5.0 | 131.0 |
| | 01 | 23.25 | - | - | - | - | 11.75 | 35.0 |
| | 02 | 53.95 | 5.0 | - | - | - | 7.65 | 66.6 |
| | 03 | 41.3 | - | - | - | - | 37.6 | 79.4 |
| 321 | | 227.0 | 0 | 0 | 0 | 0 | 246.0 | 473.5 |
| | 01 | 71.0 | - | - | - | - | 39.0 | 110.5 |
| | 02 | 32.0 | - | - | - | - | 160.0 | 191.6 |
| | 03 | 124.0 | - | - | - | - | 47.0 | 170.9 |
| 331 | | 323.0 | 0 | 0 | 139.0 | 0 | 41.0 | 503.0 |
| | 01 | 73.6 | - | - | - | - | 41.0 | 114.6 |
| | 02 | 47.1 | - | - | 57.0 | - | - | 104.1 |
| | 03 | 100.4 | - | - | 19.0 | - | - | 119.4 |
| | 04 | 101.7 | - | - | 63.0 | - | - | 164.7 |
| 332 | | 40.0 | 0 | 0 | 5.0 | 0 | 518.0 | 563.0 |
| | 01 | - | - | - | - | - | 145.5 | 145.5 |
| | 02 | - | - | - | - | - | 218.2 | 218.2 |
| | 03 | 40.0 | - | - | - | - | 159.3 | 199.3 |

EXISTING LAND USE

| ZONE | SUB ZONE | RESID. | COMM. | IND. | INSTIT. | OPEN SPACE | OTHERS | TOTAL (has) |
|------|----------|--------|-------|-------|---------|------------|--------|-------------|
| 333 | | 151.0 | 0 | 0 | 61.9 | 0 | 233.0 | 445.0 |
| | 01 | 7.2 | 0 | 0 | 15.0 | 0 | 58.0 | 80.3 |
| | 02 | 41.4 | - | - | 18.0 | 0 | 34.0 | 93.4 |
| | 03 | 102.3 | - | - | 28.0 | - | 141.0 | 271.3 |
| 334 | | 835.0 | 0 | 0 | 0 | 0 | 1070.0 | 1155.0 |
| | 01 | 52.0 | - | - | - | - | 594.3 | 646.3 |
| | 02 | 33.0 | - | - | - | - | 475.2 | 508.2 |
| 411 | | 194.0 | 0 | 64.0 | 118.0 | 0 | 231.0 | 309.0 |
| | 01 | 63.0 | - | 178.6 | 73.0 | - | 139.6 | 459.4 |
| | 02 | 125.3 | - | 85.4 | 45.0 | - | 91.4 | 347.6 |
| 412 | | 169.0 | 0 | 0 | 49.0 | 205.0 | 601.0 | 1024.0 |
| | 01 | 33.0 | - | - | 9.6 | 60.0 | 119.6 | 222.2 |
| | 02 | 103.0 | - | - | 26.4 | 38.0 | 151.2 | 323.6 |
| | 03 | 23.0 | - | - | 13.00 | 107.0 | 330.2 | 473.2 |
| 413 | | 183.0 | 0 | 0 | 77.0 | 0 | 599.0 | 859.0 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

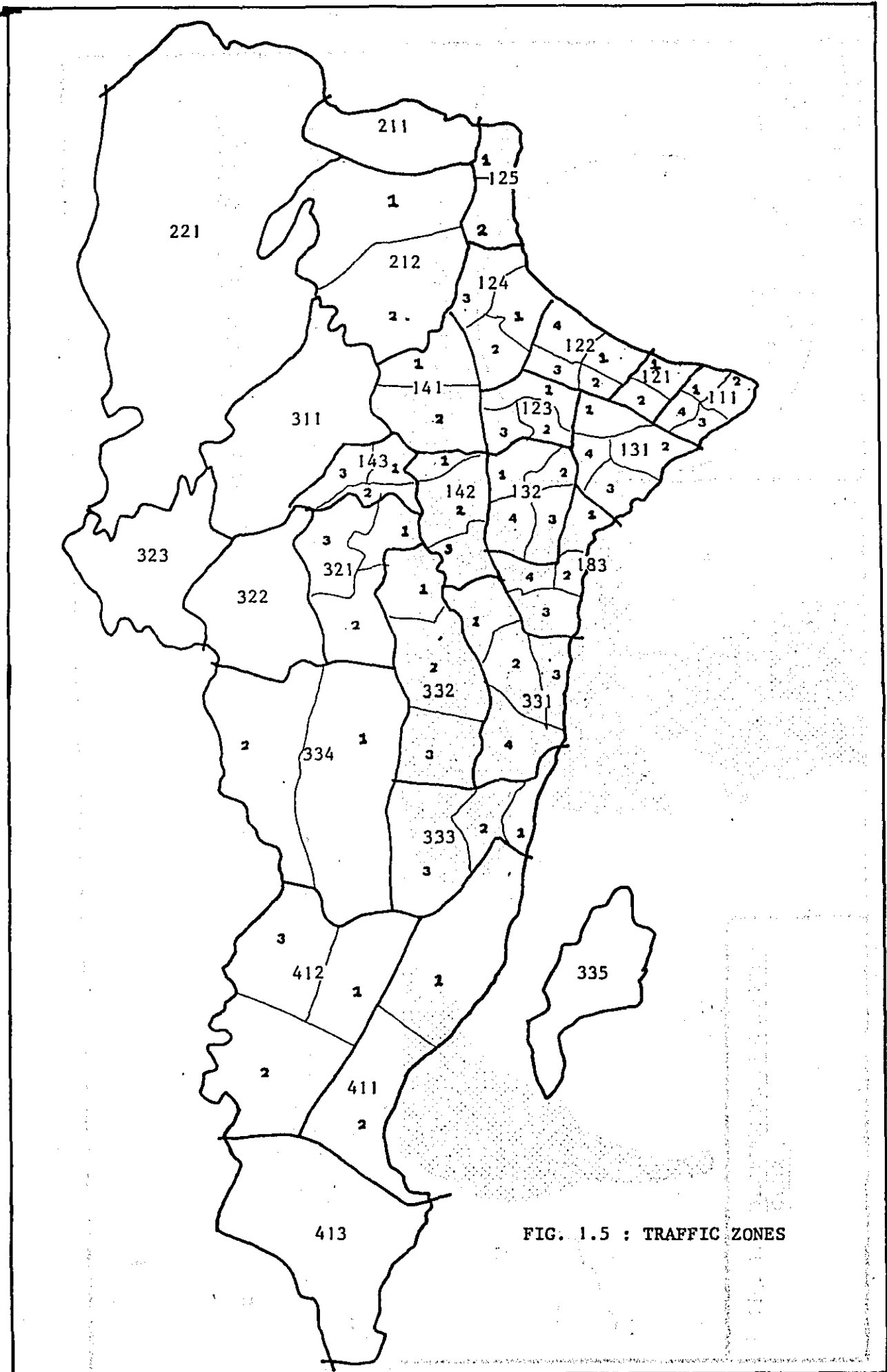


FIG. 1.5 : TRAFFIC ZONES

URBAN TRANSPORT STUDY

IN

GEORGETOWN, BUTTERWORTH & BUKIT MERTAJAM

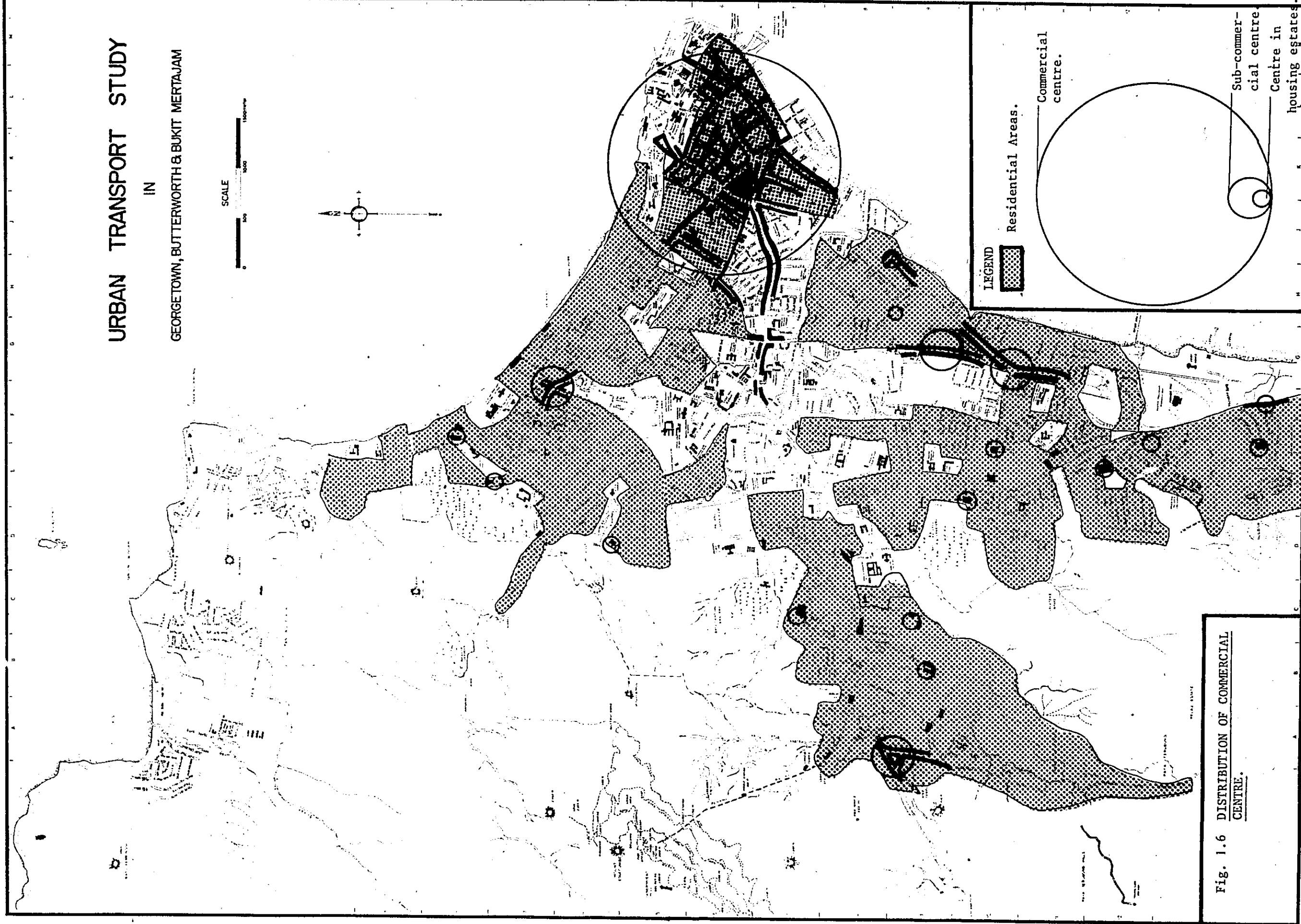
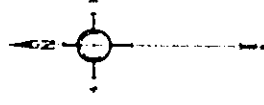


Fig. 1.6 DISTRIBUTION OF COMMERCIAL CENTRE.

LEGEND

Residential Areas.

Commercial centre.

Sub-commercial centre

Centre in housing estates.

2.2 Future Land Use

2.1 Land Use Plan

This study follows the land use plan proposed in the Phase One Study which is based on the interim zoning plan.

The result of the future land use plan is tabulated into the following:-

Table 2.1 FUTURE LAND USE AREA SIZE

| Area | Penang Island | | Province Wellesley | | Total | | Change 1979 - 2000 |
|---------------|---------------|--------|--------------------|--------|--------|--------|-----------------------|
| | 1979 | 2000 | 1979 | 2000 | 1979 | 2000 | |
| Residential | 2,700 | 5,100 | 3,100 | 5,100 | 5,800 | 10,000 | +4,400 |
| Commercial | 210 | 600 | 160 | 420 | 370 | 1,020 | + 650 |
| Industrial | 360 | 320 | 1,020 | 1,930 | 1,380 | 2,250 | + 870 |
| Institutional | 730 | 1,140 | - | 700 | 730 | 1,840 | +1,110 |
| Open Space | 390 | 740 | 1,620 | 1,280 | 2,010 | 2,020 | + 10 |
| Others | 10,300 | 7,300 | 16,200 | 13,100 | 26,500 | 30,400 | -6,100 |
| Total | 14,690 | 15,200 | 22,100 | 22,530 | 36,990 | 37,730 | + 940* |

* Supplied from reclamation of land.

2.2 Major changes in George Town

Since the town area is developed almost everywhere there will be no significant change expected. The major change in land use is that the C.B.D of George Town will purify its land utilisation as a commercial and business district through decreasing day-time population and enlarging the business activity area.

Also the population density of the residential area will be levelled if a proper housing scheme is supplied.

Development of a high-rise building for residence or a hotel and commercial buildings is under consideration for its economic feasibility and the future urban environment. (As shown in Fig. 2.1.1.)

2.3

Land Use by Traffic Zones

Based on the future land use plan, the area size of each category is measured as in Table 2.2. Zone 1 composed of George Town, Ayer Itam and Tanjong Tokong will have the following size of areas.

Table 2.2
LAND USE OF ZONE 1

| Land Use Years | Residential | Commercial | Industrial | Institutional | Open Space | Others | Total |
|----------------|-------------|------------|------------|---------------|------------|--------|-------|
| 1979 | 1,569 | 179 | 83 | 235 | 146 | 584 | 2,796 |
| 2000 | 1,740 | 409 | 47 | 253 | 509 | 202 | 3,160 |

3. Development Pressure

3.1 Development Scheme

The development scheme along the Outer Ring Road is described according to each section of the road.

1) Section A - C (Glugor, Batu Lanchang)

Major development expected in this area is a housing scheme as mentioned below.

(Housing Scheme) a.

About 4 storey housing flats developed by JKR.

(Housing Scheme) b.

A private developer is going to develop a medium density residential area where the paired road passes through.

2) Section D - G

There is one large housing scheme which is under the process of approval. The Outer Ring Road cut through this area.

3) Section G - I

Development of a high-rise building for residence or a hotel and commercial buildings is under going due to its convenient accessibility to the C.B.D and to its good urban environment.

(As shown in Fig. 3.1).

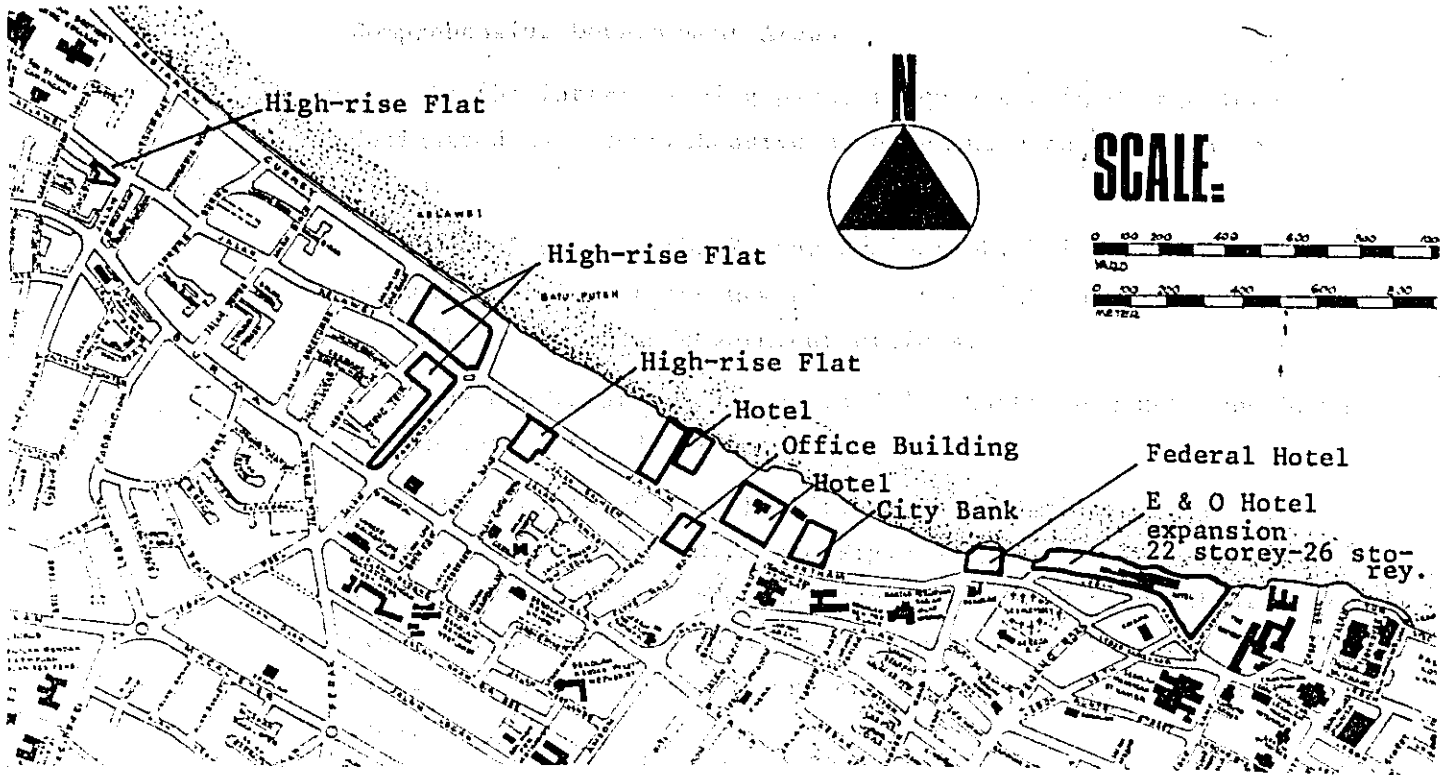


Fig.3.1 DEVELOPMENT PRESSURE ALONG JALAN NORTHAM

The off-shore of this section has a potentiality for being reclaimed because of the shallow sea. However, no development plan exists in spite of the intention of relevant agencies to reclaim the area.

Comprehensive Development Areas

In the interim zoning plan, three areas in George Town is designated as a comprehensive development area as shown in Fig.3.2.

One of them is the Komtar Project which is now under construction aiming at the new city center with commercial building as well as the state government offices.

The one located adjacent to Jalan Hutton has not gone beyond the intention for development.

The project of Macallum Street Ghaut Development is now being undertaken by P.D.C (see Fig.3.3) and this project will provide not only a residential area but a market for wholesalers. P.D.C intends to develop a new city center in the image of Manhattan, even though, at present, it is no more than only an idea.

MAP OF
THE CITY OF GEORGE TOWN
PENANG

Scale, 5 inches to 1 mile

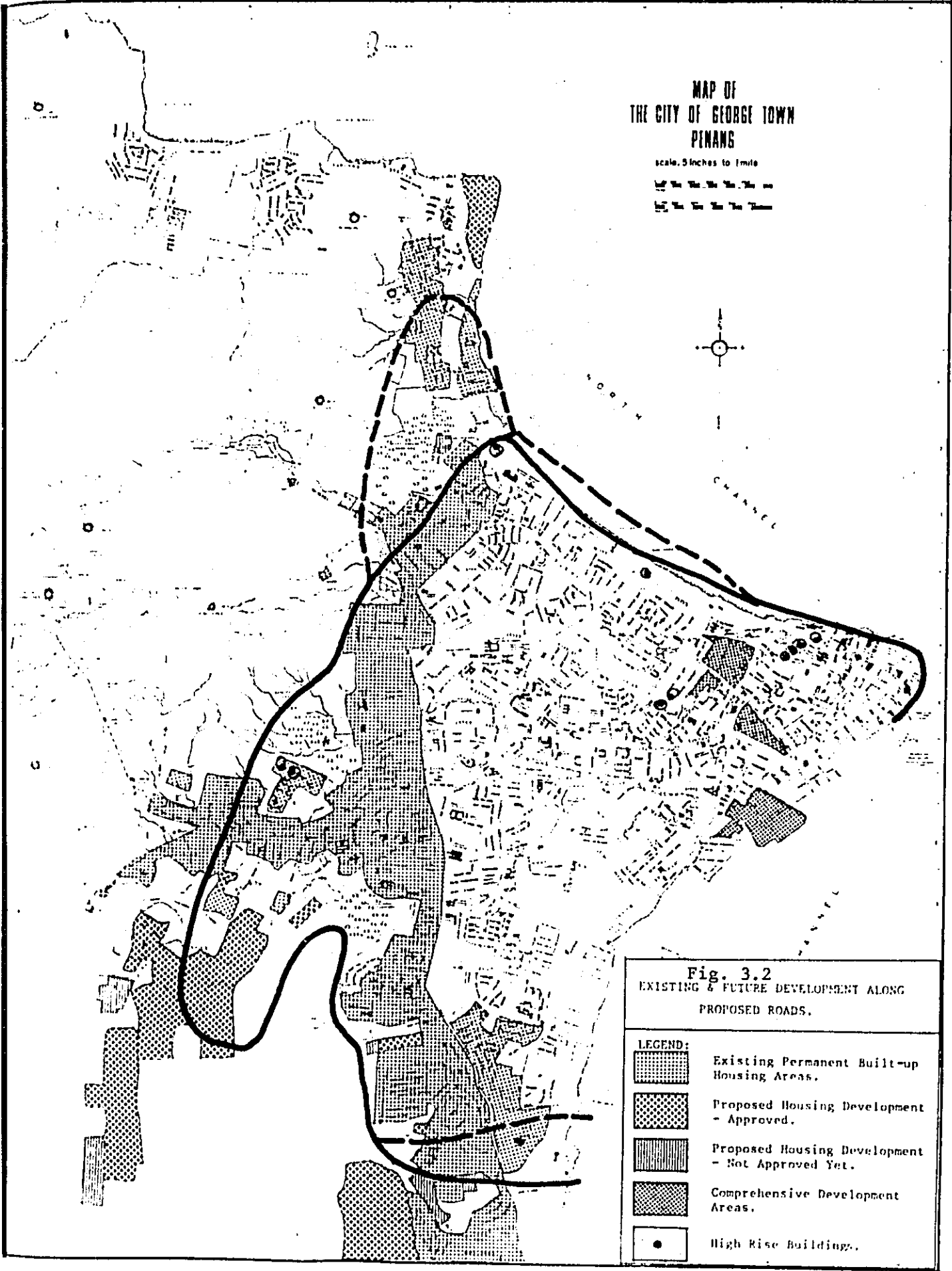
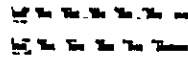







Fig. 3.2
EXISTING & FUTURE DEVELOPMENT ALONG
PROPOSED ROADS.

| LEGEND: | |
|---|--|
|  | Existing Permanent Built-up Housing Areas. |
|  | Proposed Housing Development - Approved. |
|  | Proposed Housing Development - Not Approved Yet. |
|  | Comprehensive Development Areas. |
|  | High Rise Buildings. |

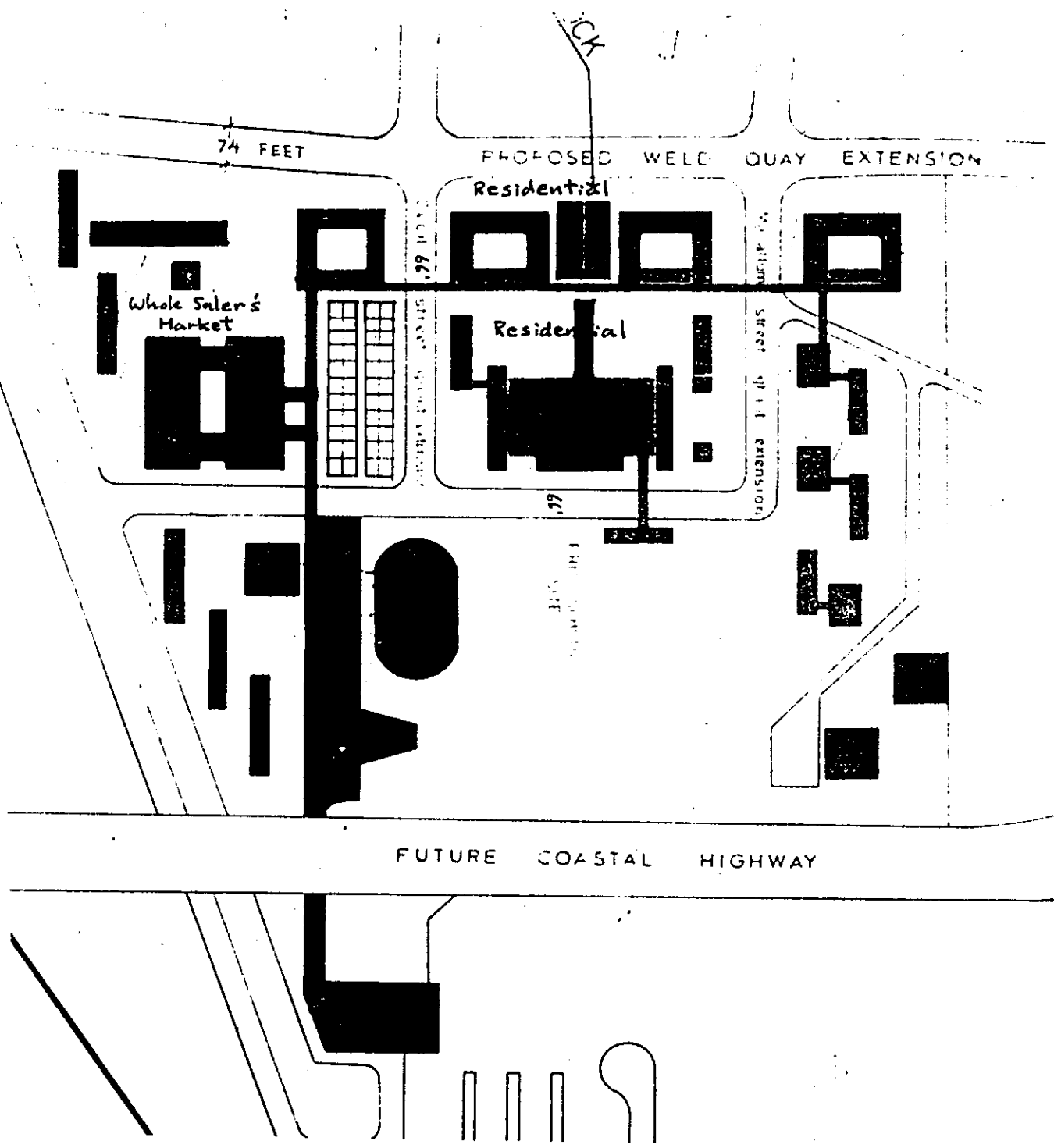


Fig. 3.3 DEVELOPMENT PLAN BY P.D.C

