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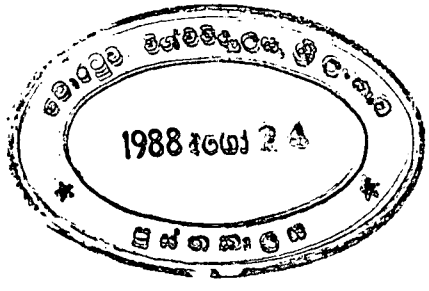
ABBREVIATIONS

L G H & C	-	Local Government, Housing & Constructions
U D A	-	Urban Development Authority
T & C P	-	Town and Country Planning Ordinance
H & T I	-	Housing and Town Implement
F A R	-	Floor Area Ratio
D D C	-	District Development Councils



A METHODOLOGY IN URBAN RENEWAL

A Case Study of Panchikawatta.

A Dissertation

Presented to

The Department of Town and Country Planning

University of Moratuwa,

SRI LANKA.

In Partial Fulfilment of the

Requirement for the Degree

Master of Science in Town and Country Planning.

PATRICK DAYARATNE

May 1981.

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SYNOPSIS

This is an analytical study evolving a process the evolution of an Urban Renewal Methodology for the absolete areas of the City of Colombo.

The process begins with the identification of these areas where condition of social, economic and physical are worse than those prevailing elsewhere in the City.

The identification and selection of the problem areas lead to an in depth analysis. The synthesis of date that follows, highlights the problems and the potential of the area. At the end, of a programme of urban renewal is formulated drawing lessons from similar approaches in other parts of the world together with a zoning scheme and a detail layout plan for the Panchikawatta area development.

The study consists of the following seven steps:

1. The objective of the study are stated here in the light of the social and physical conditions of the problem areas.

2. The Historical back ground of the City and the growth of major problems of the city in general and a detail analysis of such problems in absolete areas relating to the socio-economic and physical functions are presented here.

3. This part of the document describes the methodology of identifying the extent of absolescence and locates absolete areas for further study.

4. The selected areas is studied in detail. The survey and the outcome are presented here in quantitative terms. It also records the needs and aspirations of the people of the selected area.

5. This part of the analysis devoted to evolve objectives of urban renewal in the ground of other countries experiences acquired in this respect. The carrying out of urban renewal programme to a large extent depends on capabilities of planning agencies. This analytical part was undertaken in this step.

6. Having evolved the objectives of renewal and renewal capabilities of planning agencies this part has extended further covering the analysis of problems involved in zoning allocation.

7. In the last stage of this study a zoning scheme and a detail layout plan were formulated considering the potential and the problems of Panchikawatta afea. The cost and benefits of implementing this Urban Renewal Project were analysed and it was concluded that the Urban renewal project can be made viable in terms of social and economic considerations.

1. INTODUCTION

1.1 During the past centmry Colombo grew from a small seaport-town to its present Metropolitan status. Today, it is the primate City of Sri Lanka, and plays a decisive role in the development of the Nation. It is the financial, commercial, industrial, and administrative centre of the country.

1.1.1 Over the years the growth of various activities has resulted in a corresponding demand for transformation of the physical, social and economical fabric of the City. Consequently, there are absolete areas where inappropriate physical development exists; it is timely to consider renewal.

1.1.2 The growth of Colombo over the past century resulted in several large areas been left absolete in today's terms. Obsolecence being due to over-crowing and lack of amenities such as water, electricity, sewerage, etc. This inadequacy of services have damaged the environmental quality of these areas. There exists land misuse, waste, pollution and other damages. On the other hand, according to the socio-economic e characteristics, living stands of the people of these areas are very low.

1.2.1 The situation of absolescence has now t. be viewed against the background of the most priming problems facing Colombo. There being population, shelter, employment, health and nutrition, land use, environmental quality, etc. Solutions to these priming problems predominantly lie in affecting renewal programmes in the obsolete areas of the City.

Presently the opportunities for finding solutions and thereby City development had not been possible due to constraints offered by the obsolete areas of Colombo. It is, therefore, timely to affect renewal programmes and expeditiously carry out City develipment.

1.1.3 The proper planning and development renewal project is vital and therefore it is opportune to examine and identify an appropriate methodology for carrying out renewal policies in Colombo.

Towards this end the study will focus its attention on an area bounded within the triangle of Maradana 1st Division, Sri Sangaraja Mawatha and Panchikawatte Road, to study and demonstrate renewal methodology which could become applicable to other similar areas in the City.

The objectives of this study are:

To identify obsolete areas of the City which needs renewal due to the existence of pressing socio-economic and physical conditions which therefore call for expeditious action.

Having identified obsolete areas and the extend of obsolescence of the City, to make an in-depth study of the nature of problems in such areas.

To match the most priming problems of the City against the potential offered by obsolete areas.

To explore possible ways of mobilising necessary resources and overcome or modify constraints to enable the areas to meet the development in todays terms.

To draw lessons from study of renewal programmes formulated in other parts of the world to meet the needs of obsolete areas.

To make recommendations on an appropriate methodology for effecting urban renewal programmes.

2. STUDY OF THE CITY'S PROFILE

2.1 Historical Background of the City of Colombo.

Colombo has been a commercial Port of historical importance since 5th century A.D.

During the period from the 9th to the 16th centuries it developed as an important trading centre and was used by Arab, Persian, Indian and Chinese nationals. It was the hub of the spice trade.

2.1.1 The City of Colombo became open to the European community after the Portuguese accidentally discovered Sri Lanka in 1505.

The Portuguese with the permission of the then ruling King, opened a trading station and subsequently constructed a fortress at this sea-port where the Moors had hitherto enjoyed complete monopoly of the foreign trade. During the period of Portuguese occupation the City was physically expanded to a certain extent.

2.1.2 The Portuguese occupation ended with the seizure of the maritime provinces by the Dutch. The Dutch occupied Colombo, a period of 140 years. They demolished many parts of the old Portuguese City and rebuilt others after the Dutch manner. (1) Narrow roads were replaced by straighter and broader thoroughfares. Markets, houses, Churches, etc. were spread by the side of these well built thoroughfares.

2.1.3 The British captured Colombo in 1794 and after the annexation of the Kandyan territory in 1815, the City of Colombo became the capital of the whole island. At the beginning of the British period the City grew in its extent and in its populations

It's development was encouraged by the development of the Coffee Industry in Sri Lanka. The construction of the breakwater creating a fine harbour and the opening of the Suez Canal, greatly added its volume of shipping and accelerated the development of the City.

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(1) Hulugalla, A.A.J. - Centenary Volume of the Colombo Municipal Council (1865-1965) C.M.C. 1965 - p.20

2.2 Physical and Social Expansion of the City.

2.2.1 In early British times, the administrative activities concentrated in Fort while the commercial activities were centred mostly in Pettah.

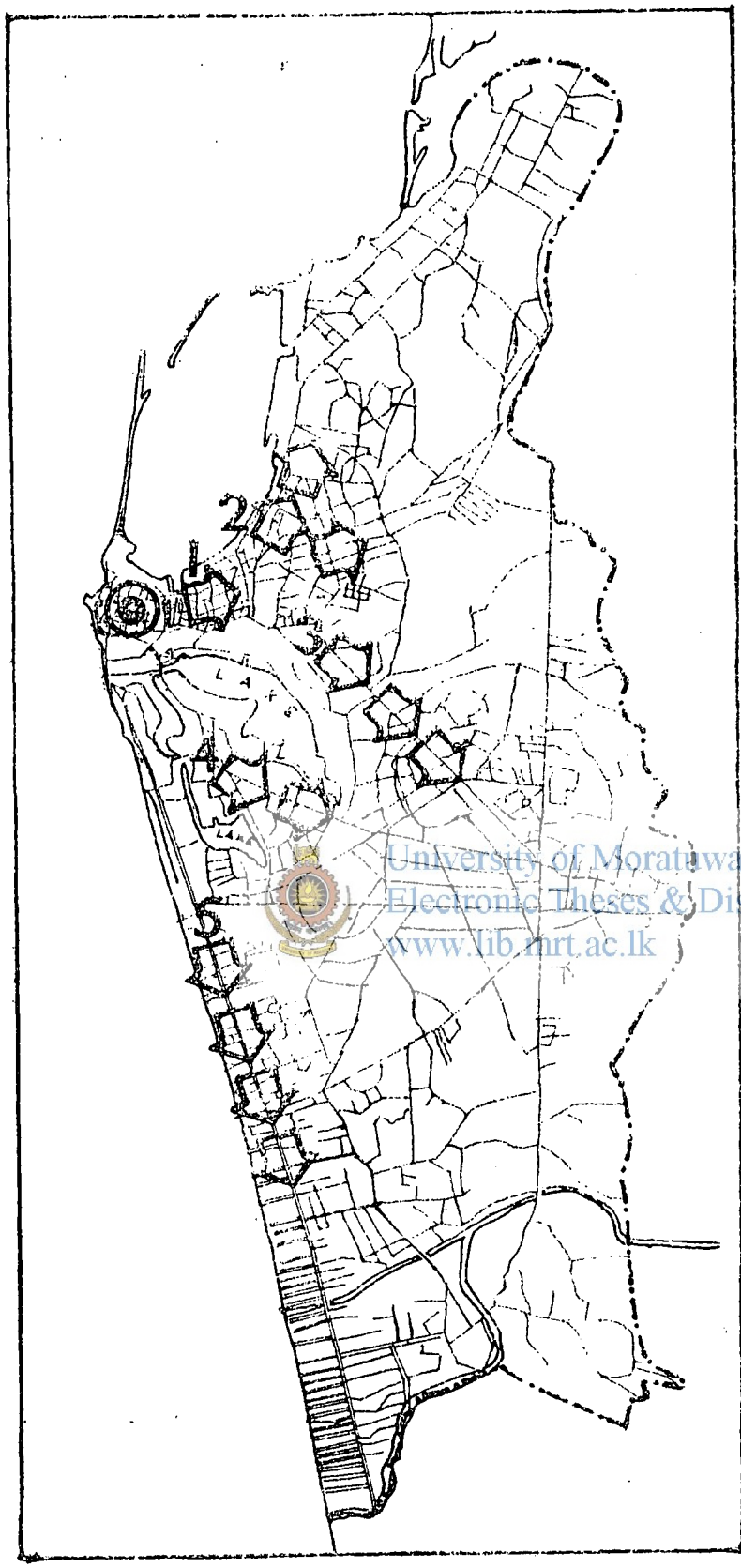
The development and movements of commercial acitivities are indicated by the names of streets, such as, Old Moor Street, New Moor Street, Chetty Street, New Chetty Street, etc.

2.2.2. By this time Mutual, Grandpass and Hultsdorp areas became fashionable suburbs were high government officials, leading doctors and lawyers lived. High class sinhalese families were mostly congregated around Wolvendaal and Messenger Street.

Colombo Chetty shroffs and merchants lived mostly in New Chetty Street while Chettiars who came from South India, had their banking offices in Chetty Street.

2.2.3 Because the Kelani river and the bordering low-lying flood-plains in the North barricaded any northerly expansion of the City, these residential areas gradually commenced their expansion towards the South, along the coastal line and towards the East, where the

EXPANSION OF THE CITY.



I. The expantion of the commercial activities towards the Pettah area.

2. The first expansion of the residential area.

3. The expansion of the residential area of the middle income groups.

4. The expansion of the residential area of the high income groups.

5. Commercial cum residential expansion along the Galle Road.

MAP No. I

adequate space is available for expansion. (See Map - 1)

The City elite accordingly changed their residential areas and began to concentrate in and around the new low density residential areas of Kollupitiya, Bambalapitiya and in the now most popular Cinnamon Gardens.

The mojority of the middle class concentrated in areas further out of the City Centre, in Wellawatta, Kirillapone, Borella, etc.

2.2.4 But two categories of people did not face this revolutionary expansion of the City and t end to reside in the same premises.

The first category is the tradesman of Indian origin whose chief occupation is the import and export trade. This category of people are a homogeneous and tightly knit group having their distinctive cultural traits and ways of living and this has resulted in heavy congestion in the commericial areas.

The poor income group, mostly the slum and shanty dwellers, is the next category of people. They have made their dwelling places in congested commercial areas, old residential areas and low-lying water-logged areas and this has resulted in creating problem areas in the City.

2.3 Population Structure of the City

2.3.1 The growth of population.

At the first enumeration of Sri Lanka in the year 1824, the population of the City of Colombo was given as 31,183 made up of 734 persons in Fort, 4,974 in Pettah and 25,475 beyond the Pettah.

(1) In 1871, when the first Decennial Census was held, this number had risen to 95,843.

The Census which followed in 1881, recorded the population at 110, 502 and the land extent as 6,084 acres giving a density of 18.3 persons per acre. (2)

2.3.2 Today the City of Colombo has a population of over half a million and a density of 39,257 persons per aquare mile. The present area of the City is over nine thousand acres (or about 14 square miles) including about a thousand acres of marshy and open land and 213 acres of water bodies (Fig.-1)

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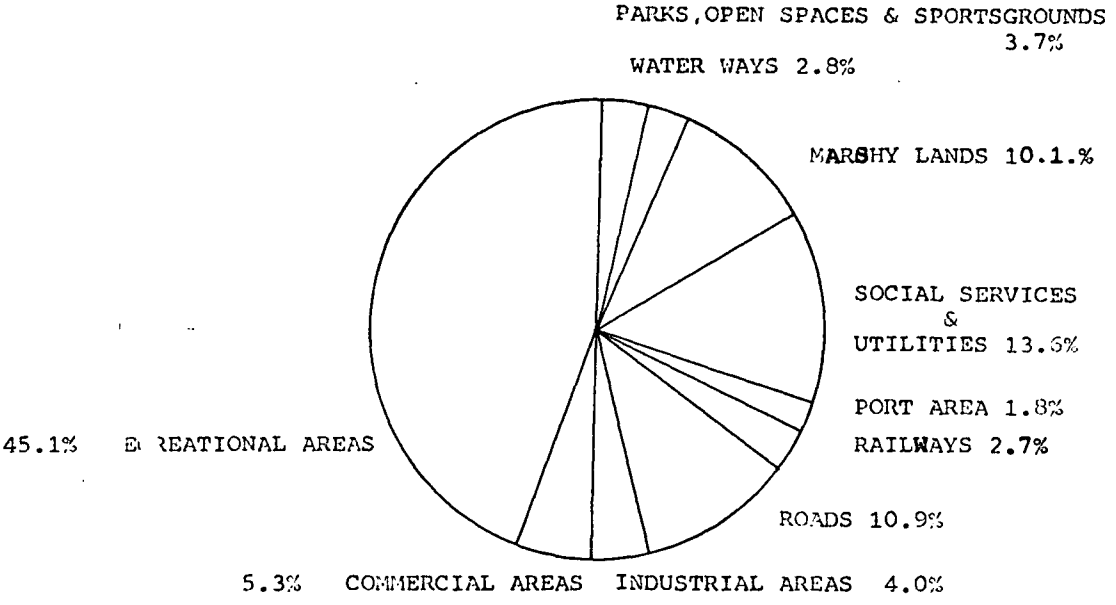
(1) Hulugalla, A.A.J. - Centenary Volume of the Colombo Municipal Council (1865 - 1965) C.M.C. 1965.

(2) ibid.,



Use	Extent as a % of total 9166 acres
Residential Areas	45.1
Commercial "	5.3
Industrial "	4.0
Roads	10.9
Railways	2.7
Port Area	1.8
Social Services and Utilities	13.6
Marshy Lands	10.1
Water ways	2.8
Parks, Open spaces and Sport grounds	3.7

Sources: Completed from the land use surveys carried out by Colombo Master Plan Project in 1977.

Figure: 1

LAND USE DISTRIBUTION
COLOMBO CITY

2.3.3 The growth of population depends on three major factors:

(i) Natural increase;

(ii) migration ; and

(iii) the expansion of the City's boundaries.

The latter, however, played only a minor role. For example, between 1881 - 1953, a period of 72 years the area has increased by 4.4. square miles. The following table describes the expansion of the City boundaries and the increase of its population.

Table 1 - Area, Population and Density of the City.

Census Year	Area (Sq.Miles)	Population	Density (P.P.Sq.M)
1881	9.45	110,502	11,693
1891	9.45	126,825	13,350
1901	10.50	154,691	15,469
1911	11.92	211,774	17,698
1921	12.93	244,163	18,882
1931	13.00	284,155	21,858
1946	13.27	362,074	27,852
1953	13.87	425,881	30,654
1963	14.32	511,639	35,729
1971	14.32	562,120	39,257

Source: Census Data, Department of Census and Statistics.

It is evident that between 1881 and 1971 the population has increased four time whereas the expansion of the City area is comparatively slower.

At the beginning of the century (1901), the density of population per square mile in Colombo stood at 15,469 which by 1953 had risen to 30,694, almost double the 1901 figures.

The density for the whole of Sri Lanka in 1971 was 460 persons per square mile. (1) Colombo is, therefore, 86 times more densely populated than the rest of Sri Lanka. This grew chiefly because of the commercial and administrative enterprises and other economic opportunities in the City.

2.3.4. Natural increase and migration.

It is also possible to analyse the growth of population in terms of natural increase and migration rates.

The dominance of Colombo had a retarding effect on the growth of other urban centres in the country. Thus, it became the place of attraction for a variety of settlers. The rural farmer whose lands were no more his or where his farming was at subsistence level, soon found advantages in engaging himself in City occupations which brought him cash income.

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(1) 1971 Census Report - Department of Census and Statistics.

2.3.4 Others found the City a good place for trading and business. Some also found the opportunities for social and economic advancement in the City, through better educational and socio-cultural facilities. (1) Thus, a whole range of migrants began to converge on the City.

The following table illustrates the total increase of population of the City of Colombo from 1871 - 1971.

Table 2 - Inter Censal Increase and Percentage Increase of Population.

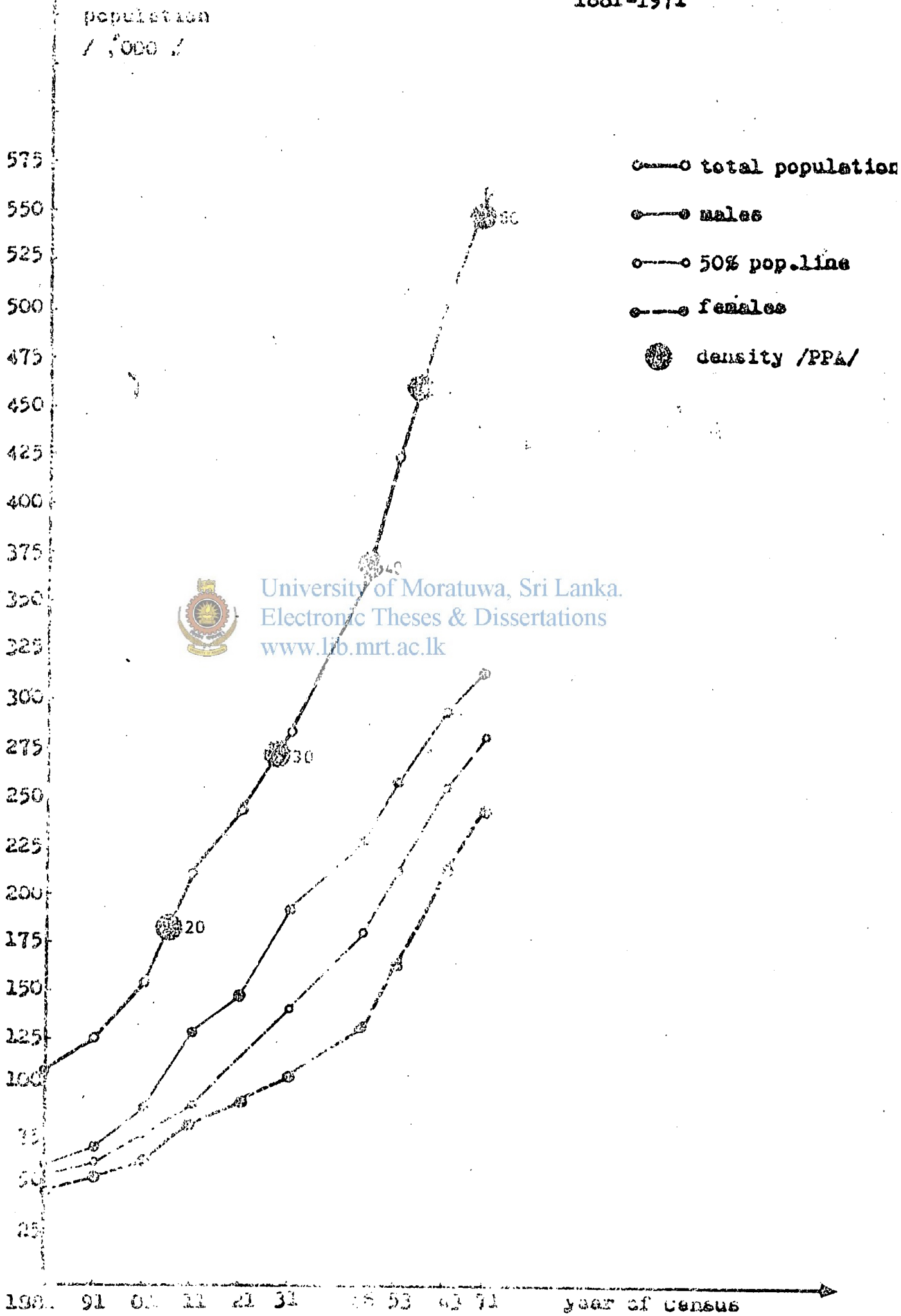
PERIOD	ACTUAL INCREASE	% INCREASE
1871-1881	14,654	15.3
1881-1891	16,323	14.8
1891-1901	27,866	22.0
1901-1911	56,583	36.6
1911-1921	32,839	16.6
1921-1931	39,992	16.4
1931-1946	77,919	27.4
1946-1953	63,807	17.6
1953-1963	84,820	17.9
1963-1971	51,173	9.9

Source - Census Reports, Department of Census and Statistics.

(1) Economic Review - People's Bank Research Department, Vol.- 3 No. 1 April 1977 p.8

FIG. 2

Colombo population growth
1881-1971



2.3.6 As noted from the above table the population growth was continuous after 1871 in the City, This trend of growth was connected with those forces which push the individual towards the metropolis, and those in the metropolis itself which follow him there.

2.3.7 However, between 1881 - 1891 the population in Colombo exceeded the Island's rate by about 6%. (1) In the next ten years (1891 - 1901) the rate was 8% above the island's rate, (2) so that by the beginning of the twentieth century the rise of the City's population had already established itself.

2.3.8. Between 1901 - 1911 the extension of the City's boundaries to include two square miles added 10,915 persons to the Colombo population. According to the reports of the Medical Officer of the Colombo Municipal Council, however, deaths had exceeded births by 17,102 persons, so that migration in to the City accounted for 62,770 persons drawn, no doubt, by opportunities tidd up with the increasing trade and commerce of the Port.

2.3.9 The actual increase between 1921 - 1931 was 39,992 persons of this only 3,267 represented the natural increase. The net migration rate was 36,272 persons, accelerated greatly by employment opportunities and trade in the City.

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(1) Census Reports - Department of Census and Statistics.

(2) ibid.,

2.3.10 It was only in the next inter consul period 1931 - 1946, that the natural increase played a significant role in the growth of the City's population. Perhaps this was a result of the eradication of Malaria. It is significant to note that as a consequence the death rate for the Island as a whole, fell from 43 per 1000 persons in 1935 to 12 per 1000 in 1945. (1) This natural increase added 16,586 persons out of a total intern consul increase of 77,919 persons for the Colombo City.

2.3.11 Between 1946 - 1953 the population rose by 63,807 persons. Excess of births over deaths numbered 53,590 persons with the result migration contributed only 10,217 persons to the City's population

2.3.12 The decline of the migrant element is a noteworthy feature of the City's population and the following table describes its reduction in detail

Table 3 - Percentage Increase of Urban Population in the City, Suburbs and Colombo District. (Average Annual)

	% 1946-1953	% 1953-1963	% 1963-1971
Colombo City	2.4	1.9	1.2
Suburbs of Colombo	4.5	2.4	2.7
Colombo District	3.4	2.7	2.7

Source - Marga Publication - Journal Vol.2 No. 1 - 1973 p.49

(1) Consus Reports - Department of Census and Statistics.

The pattern in the period 1946 - 1953 was the fairly rapid growth of the Urban Centres in a ring of suburbs encircling the core City. This trend continued in 1953 - 1963 and 1963 - 1971. During this period suburbs grew at faster rate than the City which was suffering from growing problems. People did not regard the City as a permanent place of abode and the City could not prevent the outflow of the population due to the growing problems.

2.4 Social Structure of the City.

2.4.1 Racial Composition

Colombo has a heterogeneous composition and all the communities of the Island are propresented in the City. The following table shows the comparative distribution of the population by race for Colombo City and the rest of Sri Lanka.

Table 4 - Comparative Distribution of population by race.

Race	Colombo City7	Sri Lanka
All races	100.0	100.0
Low-Country Sinhalese	44.6	44.0
Kandyan Sinhalese	2.7	3.1
Sri Lanka Tamils	12.6	13.0
Indian Tamils	11.8	16.6
Sri Lanka Moors	13.5	13.9
Indian Moors	4.2	0.5
Burghers & Eurasians	4.0	3.9
Europeans	0.7	0.6
Malay	2.7	2.9
Others	3.1	1.5

Source - Census Reports - Department of Census and Statistics.

The Sinhalese community comprises 47% of the City population. The second place is held by the Sri Lanka Moors, comprising 13.5%. The Tamils occuply the third place in the 12.6 per cent. The Census reports make a distribution between the Sri Lanka Moors and Indian Moors, But taken together they amount to 18 per cent of the population. The other communities, Burghers and Eurasians, Europeans, Malay and others, amount to only about 7 per cent.

2.4.2. Religious Composition.

Communal variety in the City is reflected in the different religious. The City is unique in that the four great religions of the world - Buddhism, Islam, Hinduism and Christianity, count among its citizens a significant number of adherents.

In Sri Lanka the Buddhists, mainly Sinhalese, Comprise a little less than two-thirds of the population ; Hindus, mainly Tamils, a fifth, while Christians and Musilims, nine and eight percent respectively.(1) In the City, Buddhists are under represented as compared to the Island, formally only 40 percent of its population.(2)

Christians, 22 percent, Hindus 17 percent and Muslims 21 percent, which latter group is more numerous than elsewhere.

2.4.3 The above analysis reveals that Colombo is the only place in Sri Lanka where all the races and religions of the entire nation meet on such a large scale. On the other hand, Colombo is the only place where all the problems relate to the shelter, health, nutrition, etc. meet on such a large scale.

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(1) Census Reports - Department of Census and Statistics.

(2) ibid.,

2.5 THE PROBLEMS OF METROPOLITAN GROWTH

2.5.1 The complexity of problems of the City of Colombo is typical of a post-Colonial City. Its original as a focal point of the collection of raw materials and the distribution of imports and exports, in addition to being an administrative, processing and transport centre, led to massive growth and dominance in the Urban hierachy which persists even today.

The consequences of this centralisation have been, increases in the absolute numbers in the population and the subsequent competition for housing, land and services.

In addition, the lack of jobs in the formal sector of employment originating from the past has also resulted in the creation of an "informal sector."

These, together with the slow adjustment of the managerial and financial mechanisms to administer the City, has resulted in a major urban crisis of near unmanageable proportions. (1)

The immediate visibility of the City problem is reflected in the physical form.

2.5.2 Housing Problem.

The W.H.O. in 1961 defined "shelter" as an enclosed environment in which man finds protection against the elements."

Decent housing is not merely the need but the right of every citizen. Adequate housing is most needed for preservation of the family unit and is the basis of the entire social structure.

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(1) Economic Review - People's Bank Reserch Department Vol-3 - No. 1 1977 - April, P.4

According to the Socio-economic survey conducted by the Department of Census and Statistics, reveals that the total number of housing units in the City of Colombo in 1971 was 75,614 accommodating 562,120 people.(1)

The same Census reveals that this population forms in to 87,174 households indicating the shortage of 11,560 housing units and this inadequacy destroys the very basis of a successful development effort.

TABLE 5 - Population and Household Size 1963 - 1971

YEAR	NO. OF HOUSE HOLDS	POPULATION	h/h SIZE
1963	72,987	511,466	7.1
1971	87,174	562,120	7.3

Source - Socio/Economic Survey - City of Colombo, Department of Census & Statistics - 1970/71.

The above table reveals that the occupancy rate in the City of Colombo had grown from 7.1 person per housing unit in 1963, to 7.3 person per housing unit in 1971.

This grave situation has come about through the low rate in the increase of housing stock as compare to the growth of population and also the consequence over crowding of existing housing units.

Table 6 - Residential Unit Densities by Wards (1975)

No.	Ward	No. of residential units	No. of non-residential units	Total No. of units	Area in Acres	Density of housing units per Acre
1	Mattakkuliya	1501	326	1827	404	3.72
2	Modera	1412	63	1475	169	8.36
3	Mahawatta	1106	434	1540	204	5.42
4	Aluthmawatha	1342	127	1469	152	8.81
5	Lunupokuna	997	425	1422	250	3.99
6	Bloemendhal	1004	289	1293	231	4.35
7	Kotahena East	1014	298	1312	380	12.66
8	Kotahena West	1374	360	1734	89	15.64
9	Kochchikade N.	863	810	1673	69	12.51
10	Gintupitiya	1369	139	1508	49	27.94
11	Masangasweediya	1142	305	1447	58	19.69
12	New Bazaar	1120	525	1645	120	9.33
13	Grandpass N.	1251	210	1461	101	12.39
14	Grandpass S.	1491	409	1900	133	11.21
15	Maligawatte E.	1077	68	1145	115	9.37
16	Aluthkade E.	1295	526	1821	62	20.89
17	Aluthkade W.	1066	396	1462	32	33.31
18	Kehelwatta	1047	183	1230	70	14.96
19	Kochchikade S.	1264	1004	2268	52	24.31
20	Fort	143	5297	5440	400	0.36
21	Slave Island	1122	400	1512	137	8.12
22	Wekande	826	490	1316	113	7.31

(contd....)

No.	Ward	No. of residential units	No. of non-residential units	Total No. of Units	Area in Acres	Density of housing units per Acre
23	Hunupitiya	674	503	1177	109	6.18
24	Suduwella	939	337	1276	264	3.56
25	Panchikawatte	1241	407	1648	64	19.39
26	Maradana	896	357	1253	64	14.00
27	Maligakanda	1019	194	1213	43	23.70
28	Maligawatte W.	1042	139	1181	143	7.29
29	Dematagoda	1534	316	1850	167	9.19
30	Wanathamulla	596	122	716	136	4.38
31	Kuppiyawatte E.	1210	148	1358	134	9.03
32	Kuppiyawatte W.	1006	231	1237	91	11.05
33	Borella N.	711	61	772	232	3.06
34	Narahenpita	1116	202	1318	425	2.63
35	Borella S.	945	399	1344	152	6.23
36	Cinnamon Garden	481	1181	1662	846	0.57
37	Kollupitiya	1371	499	1870	230	5.96
38	Bambalapitiya	1564	332	1896	339	4.61
39	Milagiriya	1140	710	1850	250	4.56
40	Thimbirigasyaya	1309	134	1443	436	3.00
41	Kirula	1933	828	2761	420	4.60
42	Havelock Town	1574	333	1907	287	5.48
43	Wellawatte N.	1554	416	1970	219	7.10
44	Kirullapona	1602	251	1853	294	5.45
45	Pamankade E.	869	340	1209	217	4.00
46	Pamankade W.	1384	150	1534	155	8.93
47	Wellawatte S.	1127	11	1138	167	6.75

Source - Municipal Assessment Registers.

To make this situation worse the number of housing units in the City of Colombo had increased during 1963 - 1971 by no more than a total of 0.6% although the growth of population have reached 9.9 % in the same period. (1)

The insufficiency of credit facilities, the rising cost of buildable land, the increasing cost of building materials, the operation of obsolete and unsuitable building laws, and the slow replacement of absolete and dilapidated houses, etc. have resulted in the rapidly growing housing shortage of the City.

2.5.3 Slums and Shanties.

Slums are areas in which predominate dwellings which either because of dilapidation, obsolescence, over-crowding, poor arrangement of design, lack of ventilation, light of sanitary facilities or a combination of these factors are unfit for human habitation.

They are sometimes built on unsuitable and temporary materials. The buildings are detrimental to safety, health, morals, confort and social well-being of inhabitants.

Industrial and commercial growth in the City without adequate planning and the poverty of the occupants as a bar to seek decent housing can be considered as major causes of these slum areas. Other than that, lack of development opportunities in rural areas has resulted in the uncontrolled rapid influx of population to the City.

Inadequate lower rental houses and inqdequate transport facilities and high cost of transport of travel from suburbs to place of work, have caused the growth and spread of them.

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(1) Economic Review - People's Bank Research Department Vol-3 No. 1 - 1977 April, P.5.

2.5.4. The report of the Special Committee on Housing reveals that in 1963, out of 69, 500 dwellings in the City, 30,500 were in slum conditions and nearly half the population of the City were comprised of slum dwellers.(1)

The report further reveals that the density of population in practically all slum areas was well over 350 persons per acre.

Today this amount has rapidly increased and the following table gives a background of the present situation.

Table 7 - Types, Numbers and Percentages of Slum & Shanty Dwellers in Colombo.

TYPE	NO. OF UNITS	OCCUPANCY RATE	ESTIMATED POPULATION
Tenement Slums	19,576	6.99	136,836
Old houses	8,172	7.02	57,367
Shanties	25,000	6.27	156,750

Source - Housing in Sri Lanka - Marga Publication - 1976 p.20

2.5.5 This type of substandard houses are scattered all over the City. Almost in all the areas where slums and shanties are clustered, the population density seems to be high as shown in the following table.

(1) Report of the Special Committee on Housing - May 1963 - P.63.

The above table reveals that the problem of over-crowding reflect over the areas where there are high percentages of slum shanty dwellers.

These "shack" type housing units are the cancerous growths in urban structure and society. They rot the heart of the towns, blight the neighbourhood and are harvingers of diesease, alcoholism, juvenile delinquency, other vices and crime of every sort.

They cost the state million in medical and social services, and they claim far more than their contribution to the City's revenue because the public expenditure on slum and shanty dwellers is always higher than on others, and the amount has been growing rapidly over the years.(1)

2.6 Problems of Land

2.6.1 One of the main impediments to the development of the City is the scarcity of buildable land with good title at affordable price. The Public ownership (Map - 29), flood and high land value, make it unavailable to the majority.

Because of this situation, several areas of the City has already become overcrowded.

2.6.2 The problem of land in Colombo is not one of congestion but rather of flooding (in certain areas) and high land values.

The high land value excludes a large share of persons from purchasing sufficient land for development

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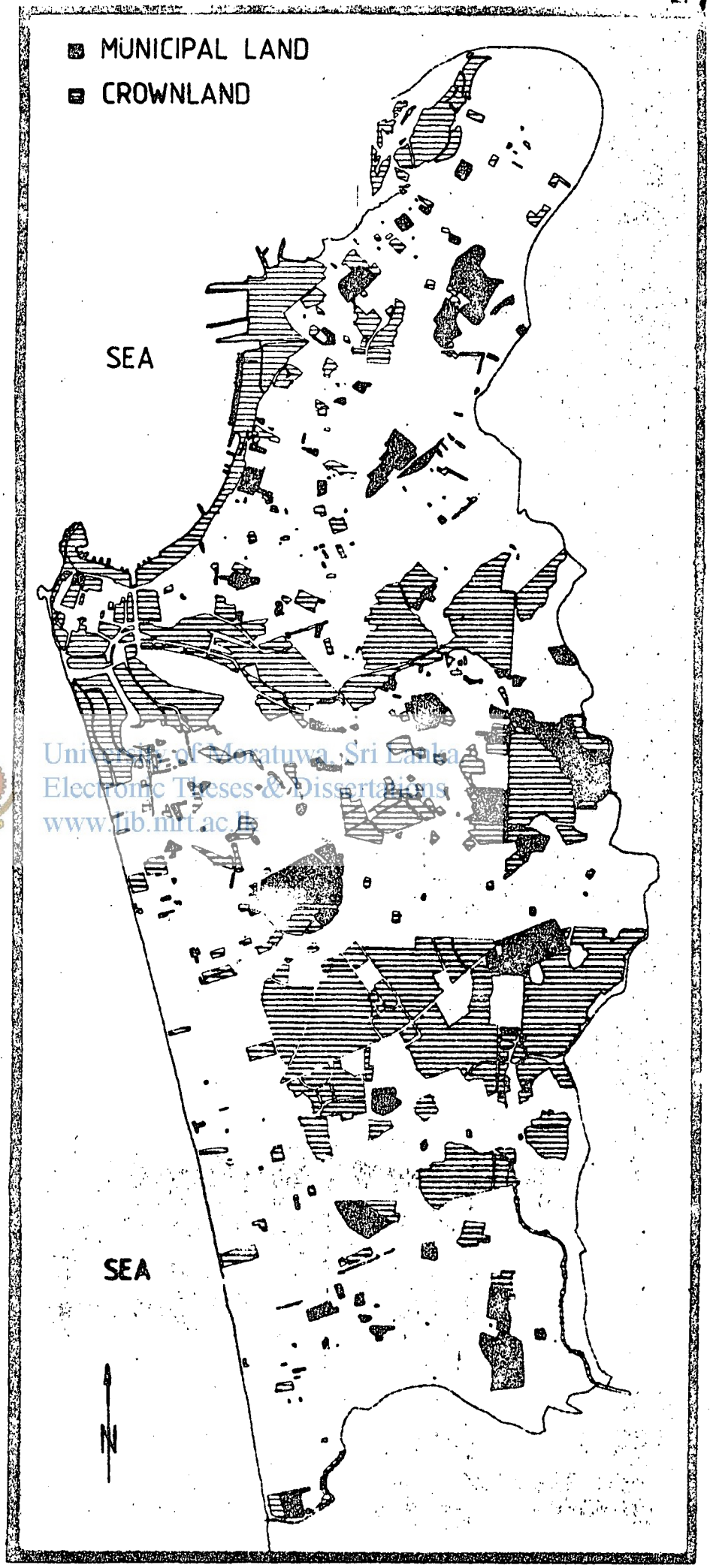
(1) Administrative Report - Colombo Municipal Cpuncil - 1976

TABLE 8 - Population density in slum and shanty areas.

Ward	Population 1971	Population Density per acre	No. of slums and shanties	No. of dwellers (1974)	% of the total population
Modera	12018	71.1	932	7825	65.1
Mahawatta	15008	73.5	764	6412	42.7
Lunupokuna	11807	47.2	599	5033	42.6
Bloemendhal	14994	64.9	823	6916	46.1
Maligawatta W.	8698	75.6	399	3136	36.0
Panchikawatta	10281*	160.6*	1043	11217*	117.8*
Maligawatta E.	11843	82.8	656	5579	47.1
Dematagoda	13526	80.9	856	7212	53.3
Wanathamulla	12818	94.2	1203	8421	65.6
Borella N.	14263	61.4	1633	13720	98.1
Pamankade E.	11769	54.1	437	3668	31.1

Source - Report on Shanties - Town Planning Unit, C.M.C. - 1974

* Figures over 100% due to comparison of 1974 slum and shanty figures with 1971 population figures.



MAP NO. 2

LAND IN PUBLIC OWNERSHIP

In recent years, land values increased dramatically, as shown in the following table.

Table 9 - Land Value

Area	Price Rs.'000 per Perch (April 1979)	Previous Peak Rs.'000 per Perch
Fort	150 - 300	100
Pettah	250 - 500	125
Cinnamon Garden	50 - 60	5 - 6
Hultsdorp	20	4

Source - Chief Valuer - quoted in the Ceylon Daily News - April 1979.

2.6.3 The search for land for development purposes has pushed private developers and State Authorities to reclaim low-lying areas. The consequence of indiscriminate reclamation has led to a new set of problems arising through unplanned surface drainage and the result is that some parts of the City are flooded even with the slightest shower.

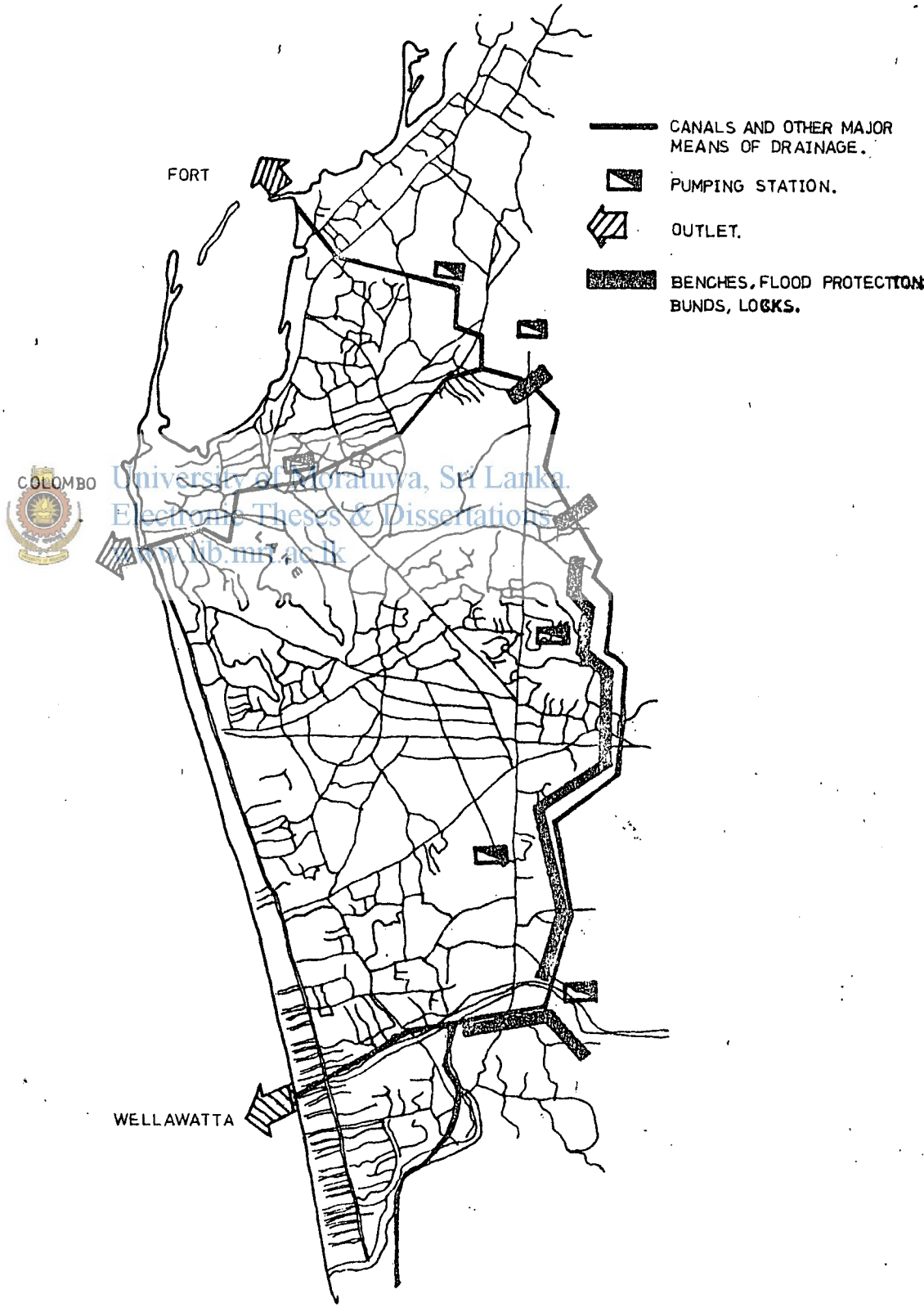
2.7 <u>The Flood Damages</u>

2.7.1 At present the low-lands of Northern and Eastern areas of the City, as well as the built-up areas of Torrington and Wanathamulla, are flooded almost regularly twice a year.

Flooding in the Northern area is primarily caused by overflowing of the Kelani river. Eastern part of the City, flooding is generally due to the blocking up of the canal system caused by inadequate capacity of the canal outlets. If the heavy rains occur in the

DRAINAGE

MAP NO: 3



City area, many parts become flooded as there are no pumping stations there to lift flood water in to the Kelani river. (Ma/ - 3).

2.7.2 The flood damage has had social and physical forms. But it is rather difficult to assess the flood damage even in appropriate figures.

Physical damage, specially damage to buildings, can be assessed tentatively only. Approximately 100 housing units in the Torrington are being flooded twice a year and the cost of re-building and repairs can be estimated at Rs. 400 per flood occurrence per house, which amounts to Rs. 80,000 annually. (1)

This problem is too heavy in low-lying areas and the annual damage to approximately 1000 shanties can be estimated at Rs. 40,000 to re-build after each flooding. (2)

2.8 Lack of Amenities

2.8.1 In terms of amenities the metropolitan area suffers spasms of water cuts, electricity interruption or failure and even the total lack of these in many dwelling units.

2.8.2. While the authorised dwellings in the City have access internal pipewater and toilet facilities, the majority of population, those who live in problem areas, depend on the stand-pipes and whatever means of waste disposal. (Table - 10).

2.9 Water Supply

2.9.1 The Colombo Municipal Council operates a complex water supply system covering the areas of Municipality with the help of the National Water Supply and Drainage Board. (Map.-4).

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(1) Administrative Report - Colombo Municipal Council, 1975.

(2) ibid.,

EXISTING WATER SUPPLY.

MAP NO: 4

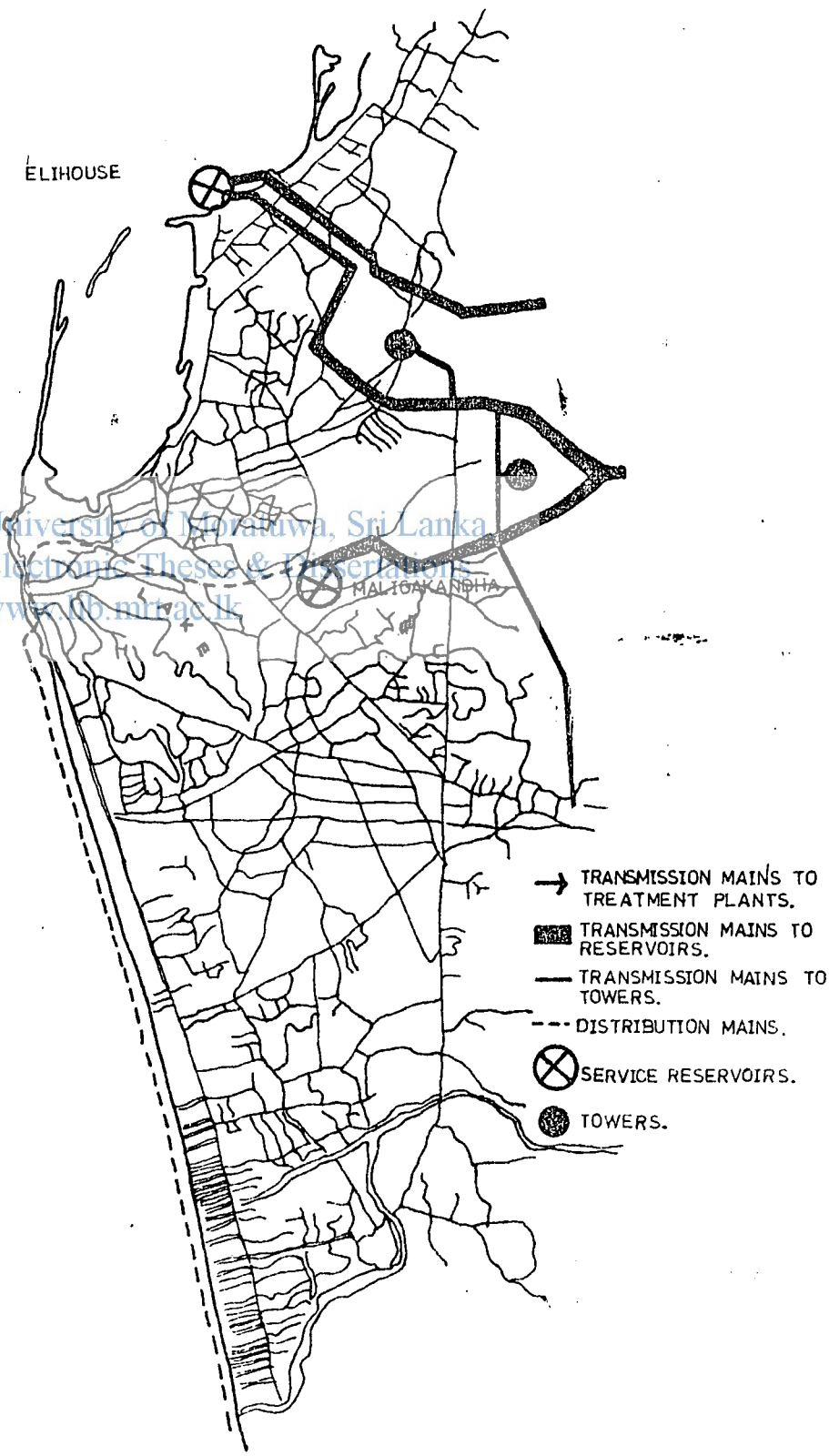
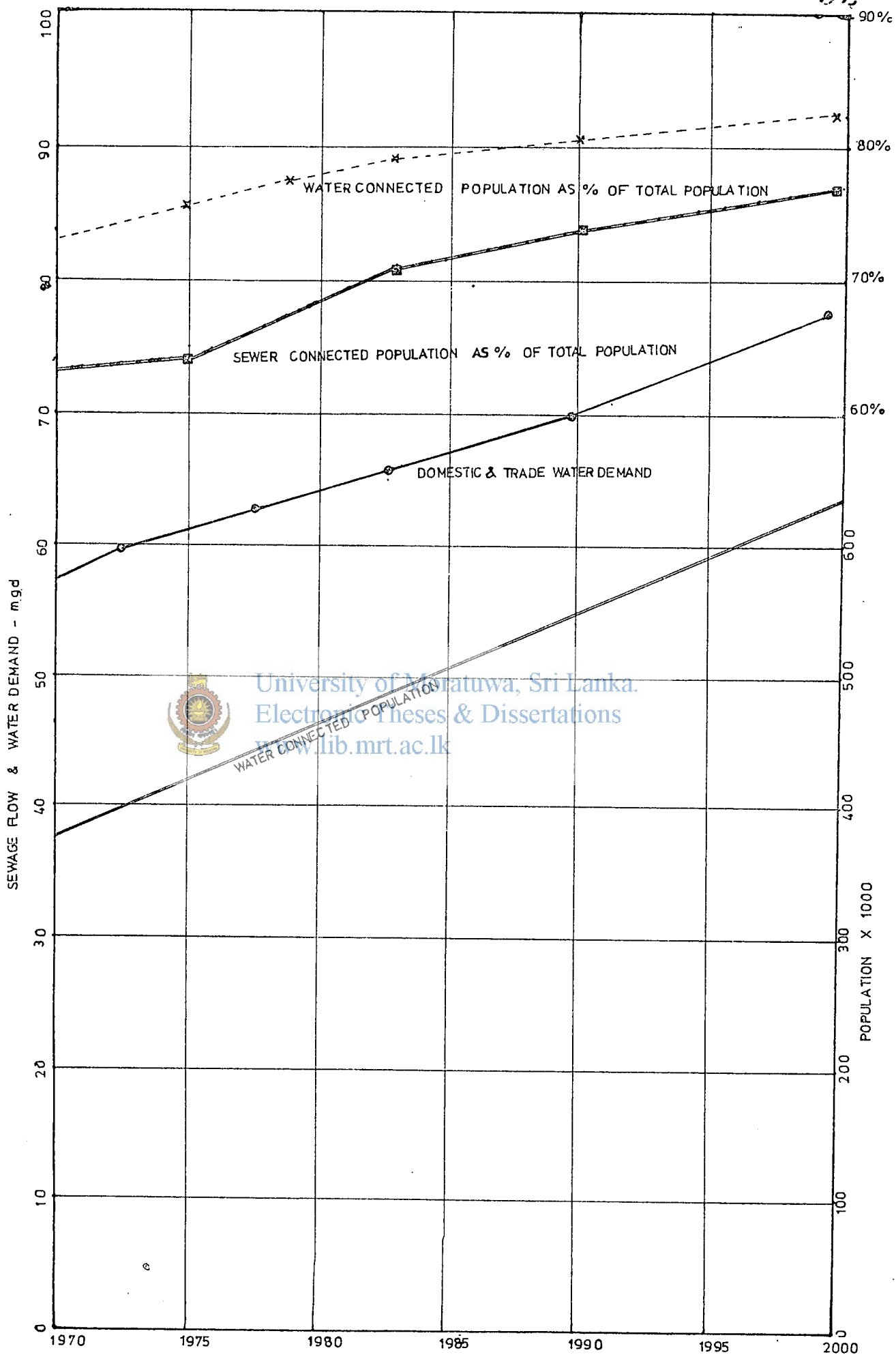


FIGURE. 3



SOURCE. WATER & SEWERAGE PROJECTIONS/ HOWARD HUMPHREYS / 1972 JUNE.

299.2 The source of water for the system are two impounding reservoirs (Labugama and Kalatuwawa) and their capacity is 32 Mgd.(1) Another system is being operated at Ambatale by the National Water Supply and Drainage Board and has the capacity of 22 Mgd.(2)

2.9.3 The two systems help each other. Part of Ambatale water is being supplied in to the Colombo Municipal Council's distribution system while part of the Kalatuwawa water is being supplied from the Dehiwala reservoir to the Southern towns.

However, transmission mains do not exist to enable the help of one system to the other in case of emergency.

2.9.4 The water demand depend to a high extent on the proportion of the people supplied through house connections and those supplied from standpipes.

The 1971 Census reveals that out of the total population of the City (562,120) only part is at present served by the house-connected water supply, whereas the rest depend on standpipes.

Today the water demand of the City exceeds the supply (Fig. - 3) and the inadequacy has affected the living standards of the City dwellers, as well as other development activities in the City.

2.10 Sewerage.

2.10.1 Colombo Municipality is the only location within Sri Lanka served by a pipe-borne sewerage system. This system covers a large area of the City whereas several areas, such as Mattakkuliya, Kirula, Kirillapone and Pamankada, are not served at present.

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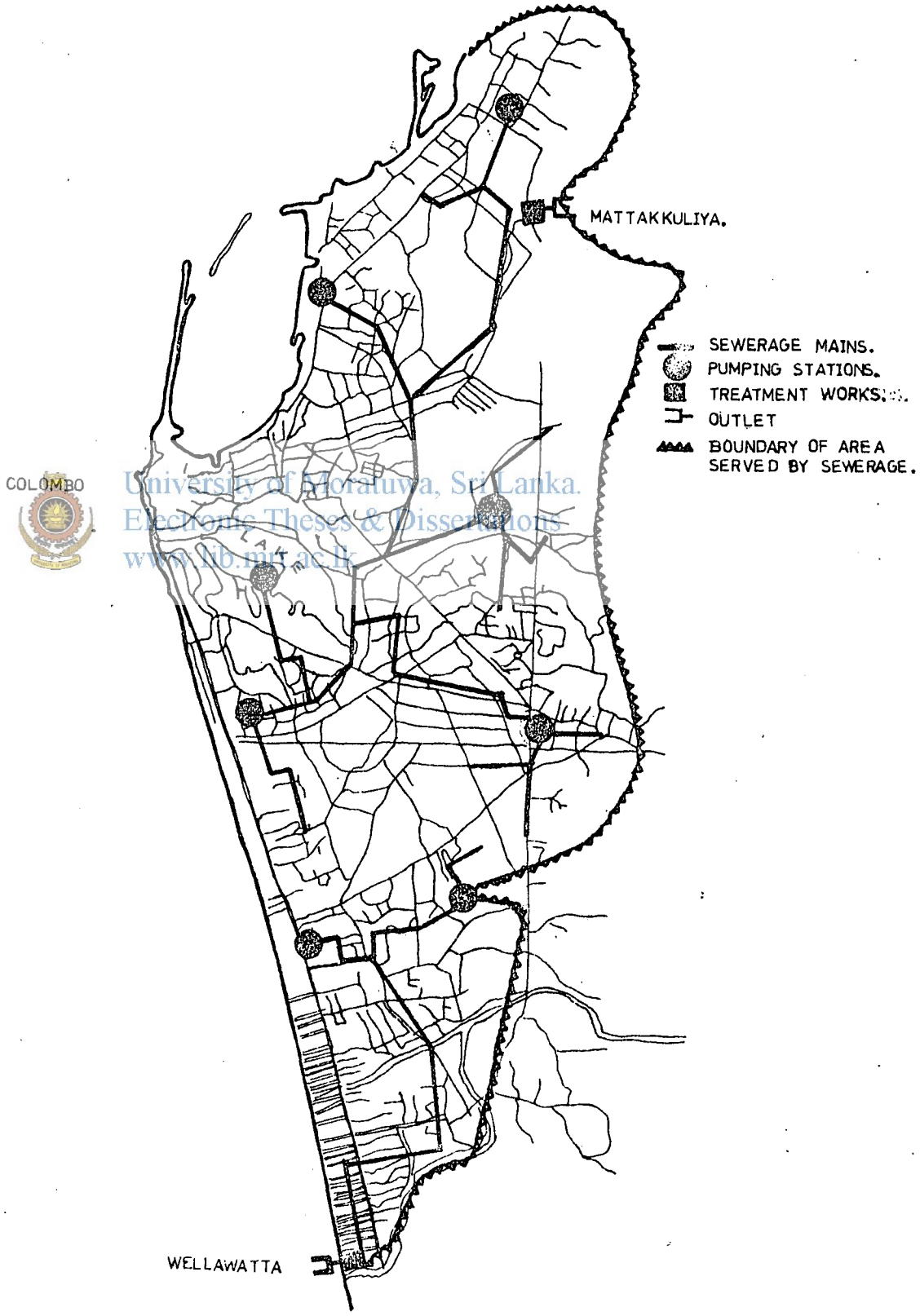
(1) Water Works Department, Colombo Municipal Council.
(2) ibid.,

EXISTING SEWERAGE & CATCHMENT AREAS

MAP NO. 5



Ward	Population	No. of water connected population.	Water connected population as % of total population	No.of sewer connected population	Sewer connected population as % of total population.
1. Mattakkuliya	14876	5800	38.9	721	4.8
2. Modera	12018	7900	65.7	4498	37.4
3. Mahawatte	15008	3700	24.6	3232	21.5
4. Aluthmawatha	13741	8700	63.3	6546	47.6
5. Lunupokuna	11807	5500	46.5	4532	30.3
6. Bloemendhal	14994	7500	50.0	7152	47.6
7. Kotahena E.	8701	6900	79.3	7422	85.3
8. Kotahena W.	12386	10800	87.1	9859	79.5
9. Kochchikade N.	12990	10400	80.6	10200	78.5
10. Jintupitiya	11333	10850	95.7	10763	94.9
11. Masangasweediya	9954	9650	96.9	8693	87.3
12. New Bazaar	10782	7200	66.7	6974	64.7
13. Grandpass N.	12098	6900	57.0	5630	46.5
14. Grandpass S.	13288	10300	77.5	7301	54.9
15. Mali awatte E.	8698	6000	68.9	3159	36.3
16. Aluthkade E.	13258	11100	83.7	11043	83.2
17. Aluthkade W.	8611	7450	86.5	7251	84.2
18. Pehelwatte	8926	7500	84.0	6708	75.1
19. Kochchikade S.	11149	10150	91.0	9634	86.4
20. Fort	17161	12100	70.5	10590	61.7
21. Slave Island	14538	11400	78.4	11300	77.7
22. Wekande	9292	8750	94.1	8703	93.6
23. Hunupitiya	8916	7250	81.3	7119	79.7
24. Suduwella	9303	8900	95.6	8662	93.1
25. Panchikawatte	10282	9200	89.4	8716	84.7
26. Maradana	8940	8350	93.4	6818	76.2
27. Maligakande	9318	8150	87.4	6711	72.0
28. Maligawatte W.	11843	9800	83.7	7482	63.1
29. Dematagoda	13526	8200	60.6	6990	51.6
30. Wanathamulla	12818	9800	76.4	9526	74.3
31. Kuppiyawatte E.	9823	8600	87.5	5266	53.6
32. Kuppiyawatte W.	8445	7900	93.5	4157	49.2
33. Borella N.	14263	13800	96.7	12045	84.4

TABLE 10 (contd..)

Ward	Population	No. of water connected population	Water connected population as % of total population	No.of sewer connected population	Sewer connected population as % of total population
34. Narahenpita	11755	9300	79.1	1767	15.0
35. Borella S.	12130	10500	86.5	9440	77.8
36. Cinnamon Gardens	16624	16000	96.2	15256	91.5
37. Kollupitiya	12425	11450	92.1	10865	87.4
38. Bambalapitiya	12850	11250	87.5	10970	85.3
39. Milagiriya	11819	11400	96.4	11783	99.6
40. Thimbirigasyaya	15780	12200	77.3	11474	72.7
41. Kirula	15950	13300	83.3	11085	69.4
42. Havelock Town	10735	10150	94.3	9698	90.1
43. Wellawatte N.	13275	11850	89.2	10623	80.0
44. Kirillapone	12682	6350	50.0	198	1.5
45. Pamankade E.	11749	8750	74.4	3050	25.9
46. Pamankade W.	10814	8050	74.4	6920	63.9
47. Wellawatte S.	11835	9850	83.2	8243	69.6

Source: South West Coastal Area Water Supply Sewerage and Drainage Project, Howard Humprey & Sons, 1972 June.

2.10.2 The existing system consists of two parts; the Northern part represent 77% of the flow and drains to Madampitiya Pumping Station and Treatment works.

It consists seven area Pumping Stations. The Nothern Sewerage treatment works in the present conditions give virtually no treatment and the sewage is being released in Kelani river. (Map - 5).

2.10.3 The Southern part drains to Wellawatta Pumping Station and includes two area pumping Stations. The Southern sewage treatment works are operated similarly as the Nothern Station and the sewage is released in to the sea through an outfall.

Non-served areas are mostly served by septic tanks, water seal and bucket lavatories. Even in some served areas, there are considerable amount of water seal and bucket lavatories due to lack of sewer connections. (Table - 10)

2.11 Employment and Household Income.

2.11.1 The occupational composition of the population of the City of Colombo is very mixed. But as a general chater of the metropolitan population the majority belongs to the service sector which mainly includes commerce, finance and administration as shown in the following table.

TABLE - 11 Distribution of Employment of Sectors

SECTOR	% OF THE TOTAL
Agriculture and Fishing	1.4
Industry	12.4
Services	66.3
Other activities	19.9

Source - Socio-Economic Survey - 1969/70
Department of Census & Statistics.

The following Table describes the percentage of income levels of the City dwellers and the rest of Sri Lanka.

TABLE - 12 Percentage Distribution of Households by income groups

Income Group (Monthly)	All Island %	All Urban %	Colombo City %
Below Rs. 100	8.1	2.9	19.6
Rs. 100 - 199	34.5	18.1	-.
Rs. 200 - 399	37.7	39.6	31.1
Rs. 400 - 599	12.0	17.9	16.9
Rs. 600 - 799	4.1	8.4	16.6
Rs. 800 - 999	1.6	5.1	-
Rs.1000 - and over	2.0	8.0	15.8
All groups	100.00	100.0	100.0

Source - Socio-Economic Survey - 1969/70
Department of Census and Statistics

Table 12 details the percentage distribution of households by income groups. From this, it is seen that 60.6% of the "all Urban" households earn less than Rs. 400 a month. Within the Colombo Municipal Council area this category is 50.7 %.

2.11.2 This situation is very obvious and high in different areas in the City. A survey carried out in 1979 in Bloemendhal and Maligawatta areas by the M.Sc. (Town ahd Country Planning) students, show that 20% of the households in the above areas earned less than Rs. 300 -.68%, less than Rs. 400 and 80%, less than Rs. 500 a month.

Considering the 1971 census household size of 6.45(average for Urban ares) the above income levels indicate a per capital income of less than Rs.65 a month for more than half the City population.

2.11.3 The following table reveals that 30.0 % of the City's Labour Force is unemployed. Therefore, the entire metropolitan area has been depressed by a lower rate of economic expansion while job seekers and consequently joblessness has arisen.

Table - 13 Labour Force and Unemployment

	Population	Labour Force	Employed	Unemployed	% of unemployed
City Total	562,120	258893	178,594	86,299	31.0
Males	317,333	207057	155,410	51,647	25.0
Females	245,057	51836	23,184	28,652	55.3

Source - Census Reports 1971 - Department of Census and Statistics.

2.11.4 Due to this chronic unemployment situation people are compelled to engage themselves in pursuits which have very low productivity and yield below subsistance income.

These low levels of income have been reflected in increasing demand upon public assistance offered by the Colombo Municipal Council.

Recently the Municipal Council revealed that demand for poor relief were increasing at 7 % per annum and might result in the entire revenue of the Council been absorbed for this purpose in the near future. (1)

2.11.5 The existing problems in the City have not emerged overnight. They have increased cumulatively and have even compounded themselves over a period of time and have resulted in several large areas being left absolete in today's terms.

The next part deals with the identification of the extent of absolescence in the city.

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(1) Report on Poor Relief - Charity Commissioner, C.M.C. 1977

3. IDENTIFICATION OF THE EXTENT OF OBSOLESCENCE IN THE CITY.

Obsolescence being due to overcrowding and lack of amenities, such as water, electricity, sewerage, etc. This inadequacy of services have damaged the environmental quality of several areas of the City.

There exists land misuse, waste, pollution and other damages.

3.1 Locational Analysis.

3.1.1 It will be impossible to do a complete analysis of the whole City to find out the extent of obsolescence due to limitation with respect to time.

The data available for this study are limited. Therefore, it is necessary to arrive at fast but scientific decisions to identify obsolete areas where existing problems call for planners immediate attention by making use of the available data and also taking into account their limitations.

3.1.2 Between February and June 1979, the students of M.Sc. (Town and Country planning) course conducted a housing survey covering the Colombo City for project titled "Housing." (1)
In the absence of any other reliable data and also due to lack of time to conduct a comprehensive survey of the City, selected data of this survey have to be used for identifying the absolete areas of the City.

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(1) Housing Project - Unpublished Report - Department of Town & Country Planning, University of Moratuwa - 1979.

3.1.3 The selected indicators for the above survey were -

1. Condition of Buildings
2. Population Density
3. Housing Density
4. Area liable to flood
5. Lack of water connections
6. Lack of Sewerage connections
7. Pollution
8. Accessibility to Dispensaries
9. Accessibility to Public Transport
10. Accessibility to Markets
11. Accessibility to Open space
12. Lack of electricity connections
13. Accessibility to schools
14. Land value

Although there were altogether 14 indicators, according to the above survey, only 10 indicators, which mainly based on physical characteristics have to be used because physical charactors to a great extent represent the obsolescence in the area.

3.1.4 This may not be the best method to ascertain the obsolete areas of the City. The indicators and their effect on a particular area may not be correctly reflected in a particular grid. For example, distance to the open space for particular grid could be 1/4 mile radically and over one mile along the public road.

Similarly a particular grid could be a good residential area with less density but surrounded by low-lying land liable to flood.

The weight of scores, too, creates similar situations, Water, which may be the first priority for some people in a particular grid, could be the third priority for others whose first priority may be housing.

All these indicators which mainly based on physical characteristics, are not equally important to the problem. One indicator can be relatively more important than another.

In the absence of precise data, they are sufficient to locate obsolete areas through selected indicators.

3.1.5 The selected indicators are -

1. Condition of Buildings
2. Population Density
3. Housing Density
4. Lack of water connections
5. Lack of Sewer connections
6. Lack of electricity connections
7. Areas liable to flood
8. Pollution
9. Accessibility to open space
10. Land Value

3.1.6 Next step was to bring the information on these indicators to a common from which could lead to the location of obsolete areas.

To facilitate this, stress maps were prepared for each selected indicator.

3.2 Stress Map Technique

3.2.1 As shown in Fig. 4, quarter inch square grids were drawn on a map of the City (scale: 1" = 1 mile) with each grid covering 40 acres. Selected scale of the City map and the size of grid were decided in order to uniform the system of available data, which were in different forms.

3.2.2 The values were assigned to each grid in respect of the indicator used. The value was on the basis that "higher the value, greater is the problem", thus expressing the stress each indicator exerts on the particular problem.

For example, highest score 5 for "Conditions of building" indicates worst (very poor) buildings which is a stress in terms of housing problem, while score 1 indicates good quality buildings where there is no indication of any stress in terms of housing problem.

3.2.3 In order to bring all these indicators to a common system of valuation, a system of weighting was adopted. Weight for each indicator was decided considering various ideas of other colleagues and officials.

The weighting is as follows:

	Weight
Condition of buildings	15
Population density	13
Housing Density	12
Lack of water connections	10
Lack of sewer connections	10
Lack of electricity connections	9
Area liable to flood	8
Pollution	7
Accessibility to open space	6
Land Value	3

Higher the weight, greater the relative importance to identify the obsolete areas of the City.

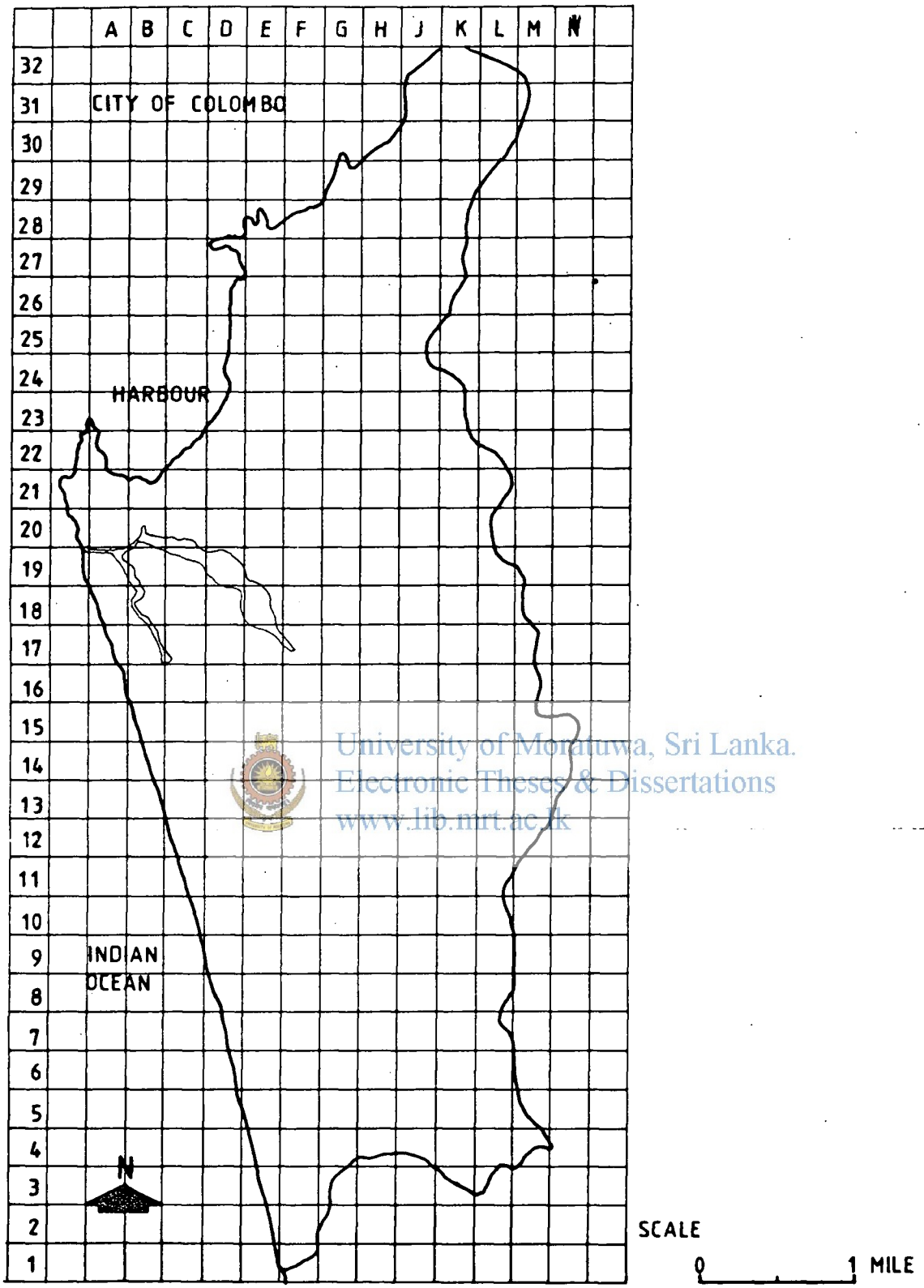


FIGURE 4

FORMAT OF STRESS MAP

		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										5	5	5			
31										4	4	4	5		
30										2	2	4			
29								4	3	5	3	3			
28						3	3	3	3	5	5				
27						3	3	3	3	5	5				
26						3	3	4	4	5	5				
25						2	3	2	5	5					
24						2	2	2	2	2	2				
23					3	4	3	3	2	2	2				
22		1		3	3	3	3	3	2	4	4	4			
21		1	1	2	3	3	3	3	3	3	3	4			
20		1	1	1	3	3	3	5	4	4	3	3			
19		1	1	2		5	5	5	4	4	3	3			
18		1	1	1	2		5	5	4	4	2	2	3		
17			1	1	2	2	4	3	2	2	2	2	4		
16			1	1	1	1	1	1	1	1	3	2	2		
15			1	1	1	1	1	1	1	1	2	2	2	2	
14				1	1	1	1	1	1	1	1	1	1	2	
13				1	1	1	1	1	1	1	1	2	5		
12				1	1	1	1	1	1	1	2	5	5		
11					1	1	1	1	1	1	1	5			
10					1	1	1	1	1	1	1	4			
9					1	1	1	1	1	1	2	4			
8					1	1	1	1	1	1	1	4			
7						1	1	1	1	1	1	4			
6						1	1	1	1	1	2	2			
5						1	1	1	2	2	2	3	2		
4						1	1	2			2	3	2		
3							1								
2							1								
1															

SOURCE: A WINDSCREEN SURVEY OF GRID AREAS

SCORES.
CONDITION OF BUILDINGS

1	GOOD
2	FAIR
3	MODERATE
4	BAD
5	VERY BAD

CONDITION OF BUILDINGS

MAP NO. 6

WEIGHTING FACTOR 15

STRESS MAP 1

		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										1	1	1			
31										1	1	1	1		
30										1	1	1			
29								3	3	2	2	1			
28						2	2	3	3	2	2				
27						2	2	2	3	3	3				
26						2	2	3	3	2	2				
25						2	4	2	2	2					
24						3	4	3	3	2	2				
23					4	4	4	3	3	2	3				
22		1		1	1	4	4	5	5	2	3	3			
21		1	1	1	2	5	5	5	4	3	2	3			
20		1	1	1	5	5	5	5	3	3	2	2			
19		2	1	1		5	5	5	4	2	2	3			
18		2	2	2	1		5	5	4	4	2	3	3		
17			2	2	1	1	2	2	3	4	2	2	3		
16			2	2	1	1	1	1	3	3	4	3	3		
15			2	2	1	1	1	1	1	1	1	2	2	2	
14				1	1	1	1	1	1	1	1	1	2	2	
13				1	1	1	1	1	1	1	1	1	1		
12				1	2	2	1	1	1	1	1	1	1		
11					2	2	1	1	1	1	1	1			
10					2	2	1	1	1	1	1	1			
9					2	2	1	1	1	1	1	1			
8					1	1	2	2	2	2	2	2			
7						2	2	2	2	2	2	2			
6						2	2	2	2	2	2	2			
5						2	2	2	2	2	2	2	2		
4						2	2	2			2	2	2		
3							2								
2							2								
1															

SOURCE: CENSUS 1971

SCORES.
PERSONS PER ACRE

1	0	-	40
2	41	-	80
3	81	-	100
4	101	-	150
5	MORE THAN 150		

POPULATION DENSITY

MAP NO. 7

WEIGHTING FACTOR 13

STRESS MAP 2

		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										1	1	1			
31										1	1	1	1		
30										1	1	1			
29								2	2	3	3	1			
28						2	2	3	3	2	1				
27						2	2	3	3	2	2				
26						2	2	2	3	3	3				
25						5	5	3	3	2					
24						5	5	5	3	3	2				
23					1	5	5	5	3	3	2				
22		1		1	1	5	5	5	3	3	3	2			
21		1	1	1	5	5	4	4	3	3	2	2			
20		1	1	1	4	5	5	4	3	2	2	2			
19		2	1	1		5	5	5	4	4	2	2			
18		2	2	2	1		5	5	3	3	2	2	2		
17			2	2	1	2	2	2	3	2	2	2	2		
16			2	1	1	2	2	2	1	1	1	1	2		
15			2	1	1	1	1	1	1	1	1	1	1		
14				1	1	1	1	1	1	1	1	2	2		
13				1	1	1	1	1	1	1	1	2	2		
12				1	1	1	1	1	1	1	1	1	1		
11					1	1	1	1	1	1	1	1			
10					1	1	1	1	1	1	1	1			
9					1	1	1	1	1	1	1	1			
8					1	1	1	1	1	1	1	1			
7						1	1	1	1	1	1	1			
6						1	1	1	1	2	2	2			
5						2	2	1	1	1	2	2	2		
4						2	2	2			2	2	2		
3							2								
2							2								
1															

SOURCE: C.M.C ASSESSMENT REGISTERS

SCORES.
HOUSES PER ACRE

1	LES THAN 6
2	7 – 10
3	11 – 15
4	16 – 25
5	MORE THAN 25

HOUSING DENSITY

MAP NO. 8

WEIGHTING FACTOR. 12

STRESS MAP 3

		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										5	5	5			
31										5	5	5	5		
30										5	5	5			
29								3	3	3	5	5			
28						3	3	3	3	3	5				
27						3	3	3	3	3	5				
26						3	3	3	5	5	5				
25						4	4	4	5	5					
24						1	1	2	5	3	3				
23					1	1	2	2	3	4	4				
22		1		1	1	1	2	2	2	3	4	4			
21		1	1	1	1	1	2	2	2	1	1	1			
20		1	1	1	4	4	5	5	2	2	1	1			
19		1	1	1		4	5	5	5	4	4	4			
18		1	1	1	1		5	5	3	3	2	1	1		
17			1	1	1	1	1	1	3	2	2	4	4		
16			1	1	1	1	1	1	1	1	1	4	4		
15			1	1	1	1	1	1	1	1	1	4	4		
14				1	1	1	1	1	1	1	1	3	3	4	
13				1	1	1	1	1	1	1	1	3	3		
12				1	1	1	1	1	1	1	3	3	3		
11					1	1	1	2	2	2	1	1			
10					1	1	2	2	2	1	1	4			
9					1	1	2	2	1	1	4	4			
8					1	1	1	2	2	2	4	4			
7						1	1	1	2	2	2	4			
6						1	1	2	4	4	5	5			
5						2	2	4	4	2	2	5	5		
4						2	1	1			2	5	5		
3							1								
2							1								
1															

SOURCE: SOUTH WEST COASTAL AREA WATER SUPPLY, SEWERAGE AND DRAINAGE PROJECT. HOWARD HUMPHREYS & SONS. 1972.

SCORES.
UNCONNECTED UNITS

1	0	-	10%
2	11	-	20%
3	21	-	30%
4	31	-	50%
5	MORE THAN 50%		

LACK OF WATER CONNECTIONS

MAP NO.9

WEIGHTING FACTOR 10

STRESS MAP 4

		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										5	5	5			
31										5	5	5	5		
30										5	5	5			
29								3	3	4	4	5			
28						3	3	3	3	4	4				
27						3	3	4	4	4	5				
26						4	4	4	5	5	5				
25						4	4	2	2	5					
24						2	2	2	3	3	3				
23					2	2	2	2	1	3	3				
22		1		1	1	2	2	1	1	3	2	2			
21		1	1	1	1	1	2	1	2	1	3	2			
20		1	1	1	3	3	4	4	1	1	3	3			
19		1	1	1		4	4	4	2	2	2	2			
18		1	1	1	1		4	4	2	2	2	2	5		
17			1	1	1	1	1	1	1	2	2	2	5		
16			1	1	1	1	1	1	1	1	1	5	5		
15			1	1	1	1	1	1	1	1	2	5	5	5	
14				1	1	1	1	1	1	1	2	2	5	5	
13				1	1	1	1	1	1	2	2	2	5		
12				1	1	1	1	1	1	1	2	2	2		
11					1	1	1	1	1	1	1	2			
10					1	1	1	1	2	2	2	2			
9					1	1	1	1	2	2	2	2			
8					1	1	1	2	2	2	2	1			
7						2	2	2	4	4	4	1			
6						2	2	4	4	4	1	1			
5						2	2	2	4	4	4	1	1		
4						2	2	2			4	1	1		
3							2								
2							2								
1															

SOURCE: SOUTHWEST COASTAL AREA WATER SUPPLY, SEWERAGE AND DRAINAGE PROJECT. HOWARD HUMPHREYS & SONS. 1972.

SCORES.
UNCONNECTED UNITS

1	0	-	20%
2	21	-	40%
3	41	-	60%
4	61	-	75%
5	MORE THAN 75%		

LACK OF SEWERAGE CONNECTIONS

MAP NO. 10

WEIGHTING FACTOR 10

STRESS MAP 5

		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										3	3	3			
31										3	3	3	3		
30										3	3	3			
29								3	3	3	3	3			
28						3	3	3	3	3	3				
27						3	3	3	3	3	3				
26						3	3	3	3	3	3				
25						3	3	3	3	5					
24						3	3	3	3	5	5				
23					1	3	3	3	3	5	5				
22		1		1	1	3	3	1	1	1	5	5			
21		1	1	1	3	3	3	1	1	1	1	1			
20		1	1	1	1	5	5	3	3	3	3	3			
19		1	1	1		5	5	5	3	3	3	3			
18		1	1	1	1		5	5	3	3	3	3	3		
17			1	1	1	1	1	1	1	1	3	3	3		
16			1	3	3	1	1	1	1	1	1	3	3		
15			1	3	3	1	1	1	1	1	1	3	3		
14				3	1	1	1	1	1	1	1	3	3		
13				3	3	1	1	1	1	1	1	3			
12				1	1	1	1	1	1	1	1	3	3		
11					1	1	1	1	1	1	3	3			
10					1	1	1	1	1	1	3	3			
9					1	1	1	1	1	1	3	3			
8					1	1	1	1	1	1	1	1			
7						1	1	1	1	1	1	1			
6						1	1	1	1	1	1	1			
5						1	1	1	1	1	1	1	1		
4						1	1	1			1	1	1		
3							1								
2							1								
1															

SOURCE: SRI LANKA ELECTRICITY BOARD.

SCORES.
UNCONNECTED UNITS

[1] LESS THAN 30%

[3] BETWEEN 30_70%

[5] MORE THAN 70%

LACK OF ELECTRICITY CONNECTIONS

MAP NO. 11

WEIGHTING FACTOR 9

STRESS MAP 6

		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										5	5	5			
31										5	5	5	5		
30										5	5	5			
29								1	1	1	1	5			
28						1	1	1	1	3	3				
27						1	1	1	1	3	3				
26						1	1	1	5	5	3				
25						1	1	1	5	3					
24						1	1	3	3	3	5				
23					1	1	1	1	3	5	5				
22		1		1	1	1	1	1	1	3	5	5			
21		1	1	1	1	1	1	1	1	3	3	5			
20		1	1	1	1	1	1	3	3	1	1	3			
19		1	1	1		3	3	3	1	1	1	3			
18		1	1	1	1		3	3	1	1	1	3	3		
17			1	1	3	1	1	1	1	1	1	1	3		
16			1	1	1	1	1	1	1	1	1	3	3		
15			1	1	1	1	1	1	1	1	1	1	1	1	
14				1	1	1	1	1	1	1	1	1	1	1	
13				1	1	1	1	1	1	1	1	3	3		
12				1	1	1	1	1	1	3	3	3	1		
11					1	1	1	1	1	1	3	3			
10					1	1	1	1	1	1	1	1			
9					1	1	1	1	1	1	1	1			
8					1	1	1	1	1	1	1	1			
7						1	1	1	1	1	3	3			
6						1	1	1	1	3	3	3			
5						1	1	1	1	3	3	1	1		
4						1	1	1			3	1	1		
3							1								
2							1								
1															

SOURCE: CITY PLANNING UNIT, COLOMBO MUNICIPAL COUNCIL.

SCORES.

NOTE: MINOR FLOODS OCCUR MORE FREQUENTLY THAN MAJOR FLOODS.

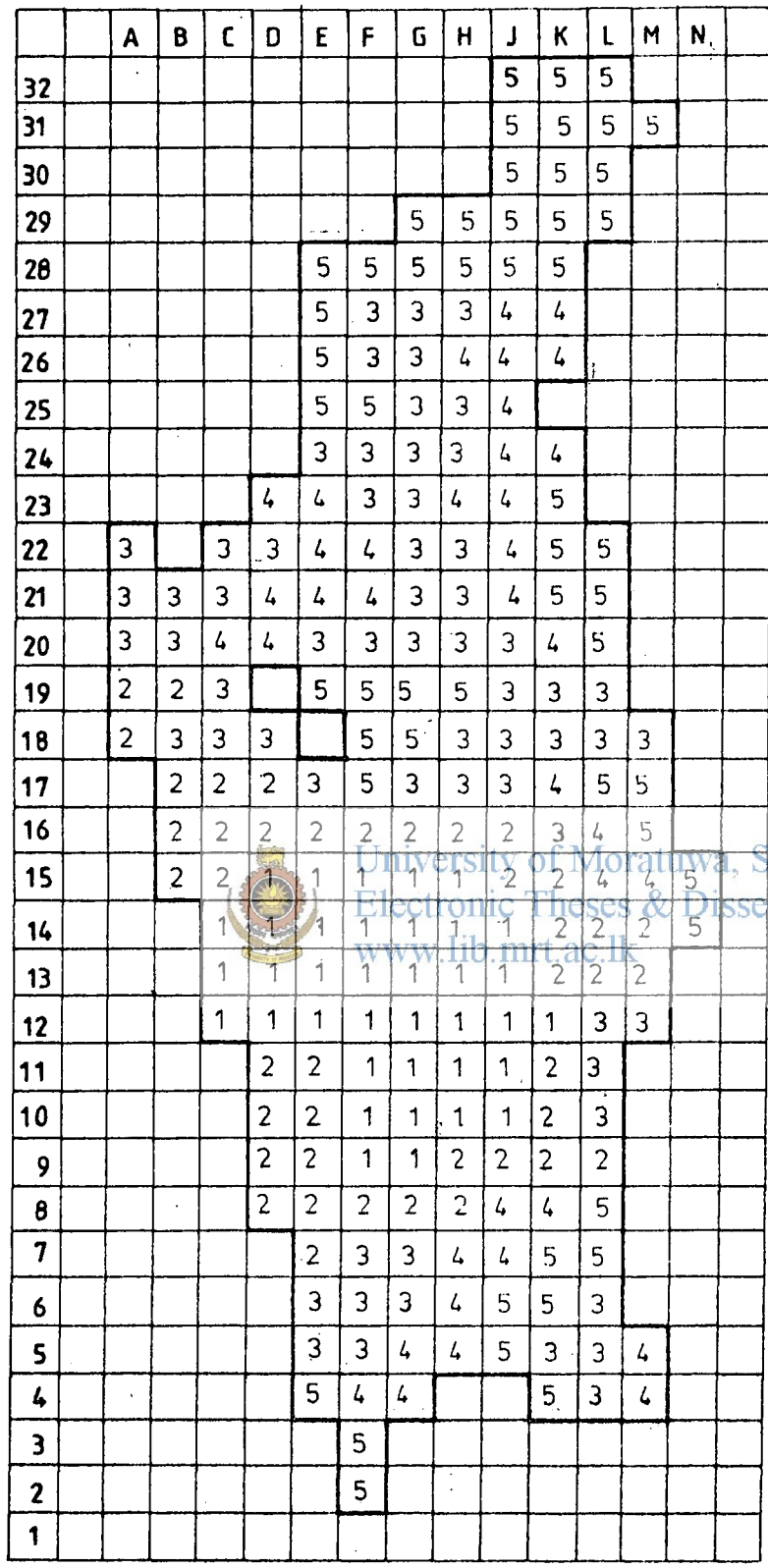
1	NO FLOODS
3	MAJOR FLOODS
5	MINOR FLOODS

AREAS LIABLE TO FLOOD

MAP NO. 12

WEIGHTING FACTOR 8

STRESS MAP 7



SOURCE: CITY PLANNING UNIT. COLOMBO MUNICIPAL COUNCIL.

SCORES.
NEAREST SOURCE OF POLLUTION.

1	MORE THAN 1 MILE
2	3/4 _ 1 MILE
3	1/2 _3/4 MILE
4	1/4 _1/2 MILE
5	LESS THAN 1/4 MILE

POLLUTION

MAP NO. 13

WEIGHTING FACTOR 7

STRESS MAP 8

		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										5	5	5			
31										3	5	5	5		
30										1	3	5			
29								5	5	3	3	5			
28						3	1	3	5	5	5				
27						3	1	3	5	5	5				
26						5	3	5	5	5	5				
25						5	5	5	5	5					
24						1	3	3	5	5	5				
23					1	1	3	5	5	5	3				
22		1		1	1	3	5	5	3	3	1	3			
21		1	1	3	3	3	5	5	3	1	3	5			
20		1	1	1	3	3	5	5	1	1	3	5			
19		1	1	3		5	5	5	3	3	3	5			
18		1	3	3	3		5	5	5	3	5	5	3		
17			1	3	5	5	5	5	5	1	3	5	1		
16			1	1	3	3	5	3	3	3	3	1	3		
15			3	3	3	5	5	3	1	1	1	3	3	5	
14				3	1	3	5	3	1	1	1	3	3	5	
13				1	3	3	5	1	1	1	1	3	5		
12				3	5	5	3	1	1	1	3	3	5		
11					5	5	3	1	3	3	3	1			
10					5	5	5	3	3	3	1	3			
9					5	3	3	3	3	3	3	5			
8					3	1	3	3	1	1	3	5			
7						3	3	3	3	3	5	5			
6						3	3	3	1	3	3	3			
5						5	5	3	1	3	3	5	5		
4						5	5	3			1	3	5		
3							5								
2							5								
1															

SOURCE: SURVEY DEPARTMENT

SCORES.
NEAREST OPEN SPACE FOR RECREATION

1	LESS THAN 1/8 MILE
3	1/8 - 1/4 MILE
5	MORE THAN 1/4 MILE

ACCESSIBILITY TO OPEN SPACES

MAP NO. 14

WEIGHTING FACTOR 6

STRESS MAP 9

		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										4	4	4			
31										4	4	4	4		
30										4	4	4			
29								5	5	5	5	4			
28						5	5	5	5	5	5				
27						5	5	5	5	5	5				
26						5	5	5	5	5	5				
25						4	4	5	5	5					
24						4	4	4	5	5	5				
23					1	1	1	2	2	2	4				
22		1		1	1	2	2	2	4	4	4	4			
21		1	1	1	2	2	2	4	4	5	5	5			
20		1	1	1	2	4	4	5	5	5	5	5			
19		1	1	1		2	2	2	2	4	5	5			
18		1	1	2	2		2	2	2	4	4	4	5		
17			1	1	2	4	4	4	4	5	5	4	5		
16			1	2	2	2	2	2	2	2	4	4	5		
15			2	2	2	1	1	1	1	2	4	5	5		
14				2	2	1	1	1	1	1	1	2	2	4	
13				2	2	1	1	1	1	1	1	1	2		
12				2	1	1	1	1	1	1	2	2	2		
11					1	1	1	1	1	2	2	4			
10					1	1	1	1	1	2	2	4			
9					1	1	1	1	1	2	4	4			
8					1	1	1	2	2	2	4	4			
7						1	1	2	2	4	4	4			
6						1	1	2	2	4	4	4			
5						2	2	2	2	2	4	4	4		
4						2	2	2			4	4	4		
3							2								
2							2								
1															

SOURCE: SOUTH WEST COASTAL AREA WATER SUPPLY, SEWERAGE AND DRAINAGE PROJECT. HOWARD HUMPHREYS & SONS. 1972.

SCORES.

PERCENTAGE OF DOMESTIC PROPERTIES WITH ANNUAL VALUE MORE THAN Rs.500.

1	MORE THAN 80%
2	50 _ 80%
4	20 _ 50%
5	LESS THAN 20%

LAND VALUES

MAP NO. 15

WEIGHTING FACTOR 3

STRESS MAP 10

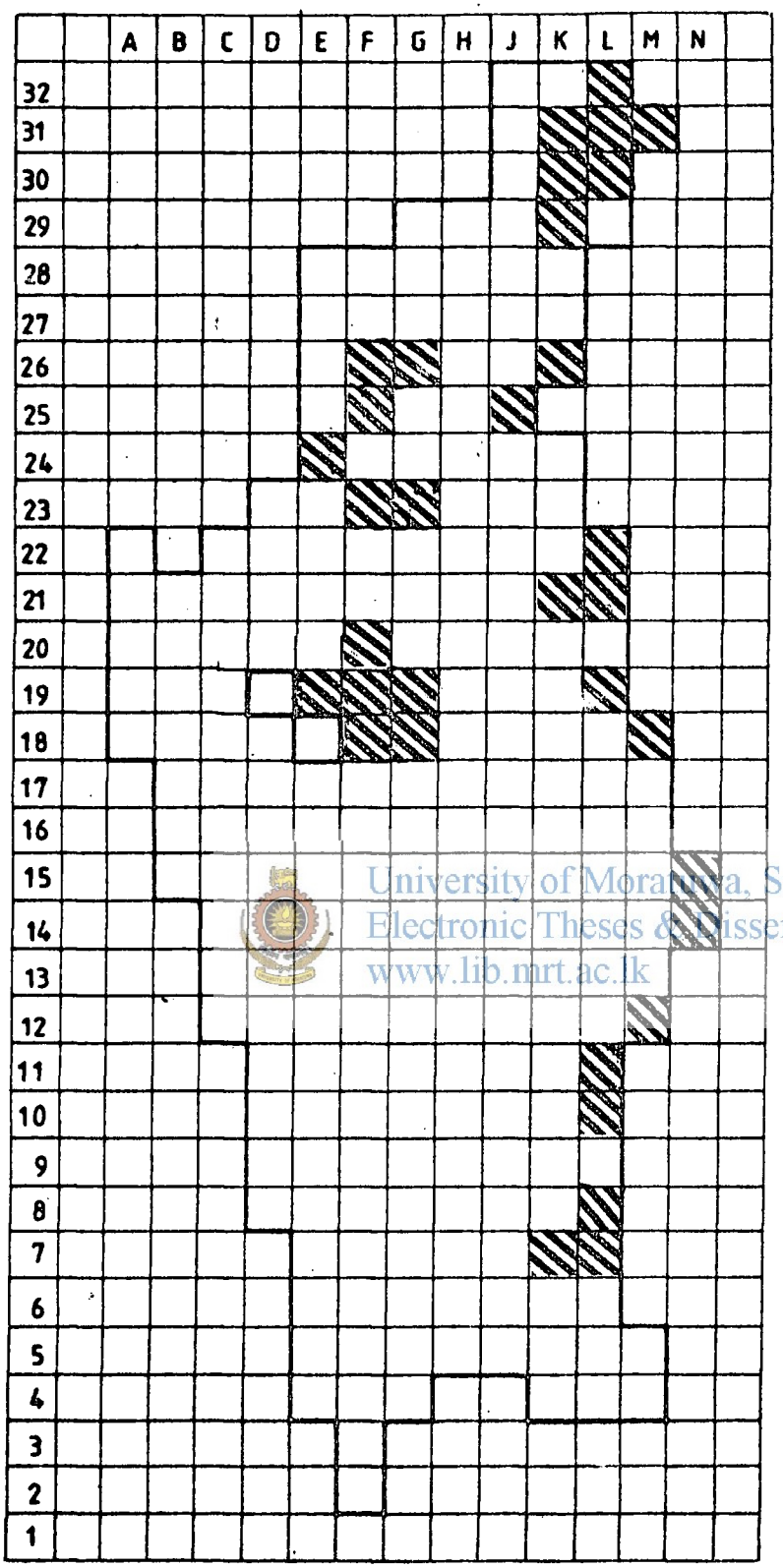
		A	B	C	D	E	F	G	H	J	K	L	M	N	
32										4	4	5			
31										4	5	5	5		
30										4	5	5			
29								4	4	4	5	4			
28						4	4	4	4	4	4				
27						4	4	4	3	3	4				
26						4	5	5	4	4	5				
25						3	5	4	4	5					
24						5	3	3	4	4	4				
23					2	3	5	5	3	3	4				
22		1		1	2	2	3	3	4	4	4	5			
21		1	1	2	2	3	3	3	3	4	5	5			
20		1	1	2	2	4	5	4	4	4	4	3			
19		1	2	2		5	5	5	4	4	4	5			
18		1	1	3	3		5	5	4	4	4	3	5		
17			2	2	3	4	4	4	4	3	3	4	4		
16			2	2	2	2	1	1	1	2	3	3	4		
15			2	2	2	1	1	1	1	2	2	3	4	5	
14				1	1	1	1	1	1	2	2	3	4	5	
13				2	2	1	1	1	1	2	3	4	4		
12				2	3	2	1	1	1	1	2	3	5		
11					3	2	1	3	3	3	4	5			
10					2	2	3	3	3	4	4	5			
9					2	3	3	3	4	4	4	3			
8					3	3	4	4	4	3	3	5			
7						2	2	3	3	4	5	5			
6						2	2	3	3	3	4	4			
5						3	3	3	4	4	3	3	4		
4						3	3	3			4	3	3		
3							3								
2							3								
1															

SCORES.

1	LESS THAN 100
2	100 _ 199
3	200 _ 299
4	300 _ 399
5	MORE THAN 400

MAP NO. 16

FINAL STRESS MAP



SCORES.

OBSOLETE AREAS ACCORDING TO THE FINAL STRESS MAP

MAP NO. 17

OBSOLETE AREAS OF THE CITY

3.2.4. The weighted stress scores of each indicator for each grid were aggregated and the total stress scores computed by using a Master Sheet.

These total scores were grouped in to five as shown in the final stress map. Grids with score 5 as shown in the final stress map are relatively obsolete areas in the City.

Finally these scores again presented in a coloured grid map to indicate the obsolete areas of the City.

3.2.5. Moreover, there may be methods more scientific but time consuming. But above used stress map technique is an expeditious method and could be operated within the limited data available.

4. SELECTED AREA PROBLEMS - DESCRIPTION AND ANALYSIS

The final stress map have identified several areas as absolete areas and Map - 17 gives a background of their locations.

As shown in the above map these obsolete areas have clear location in the Northern and Eastern and inner parts of the City.

As handling all the obsolete areas at the same time was beyond the capacity it was then decided to select one area which is fairly representative of the obsolete areas and their basic problems.

At this stage the Panchikawatta area which is bounded within the triangle of Maradana Road, Sri Sangaraja Mawatha and Panchikawatte Road, was selected as the study area.

LOCATION OF STUDY AREA

MAP NO 18

SCALE- 1:50,000

Conditions seen in this area are similar to conditions prevailing in almost all the other obsolete areas in the City. The location of this area in relating to the City of Colombo can be seen in Map - 18. Having selected the study area a sample land use survey was carried out and a land use map was compiled. (Map-19).

4.1 Physical Description.

4.1.1 Panchikawatta area is 64 acres (14.3 Ha.) in extent and had a population of 10,282 in 1971. The population density is 160,66 persons per acre. As an evidence of the mixed social character the area includes people of different races and religions.

The area is entirely covered with privately owned lands except only four public land plots.

This portion of the old City which includes both commercial and residential areas, is being suffered from various problems such as over-crowding, lack of efficient services, etc. and there exists land misuse, waste and other damages.

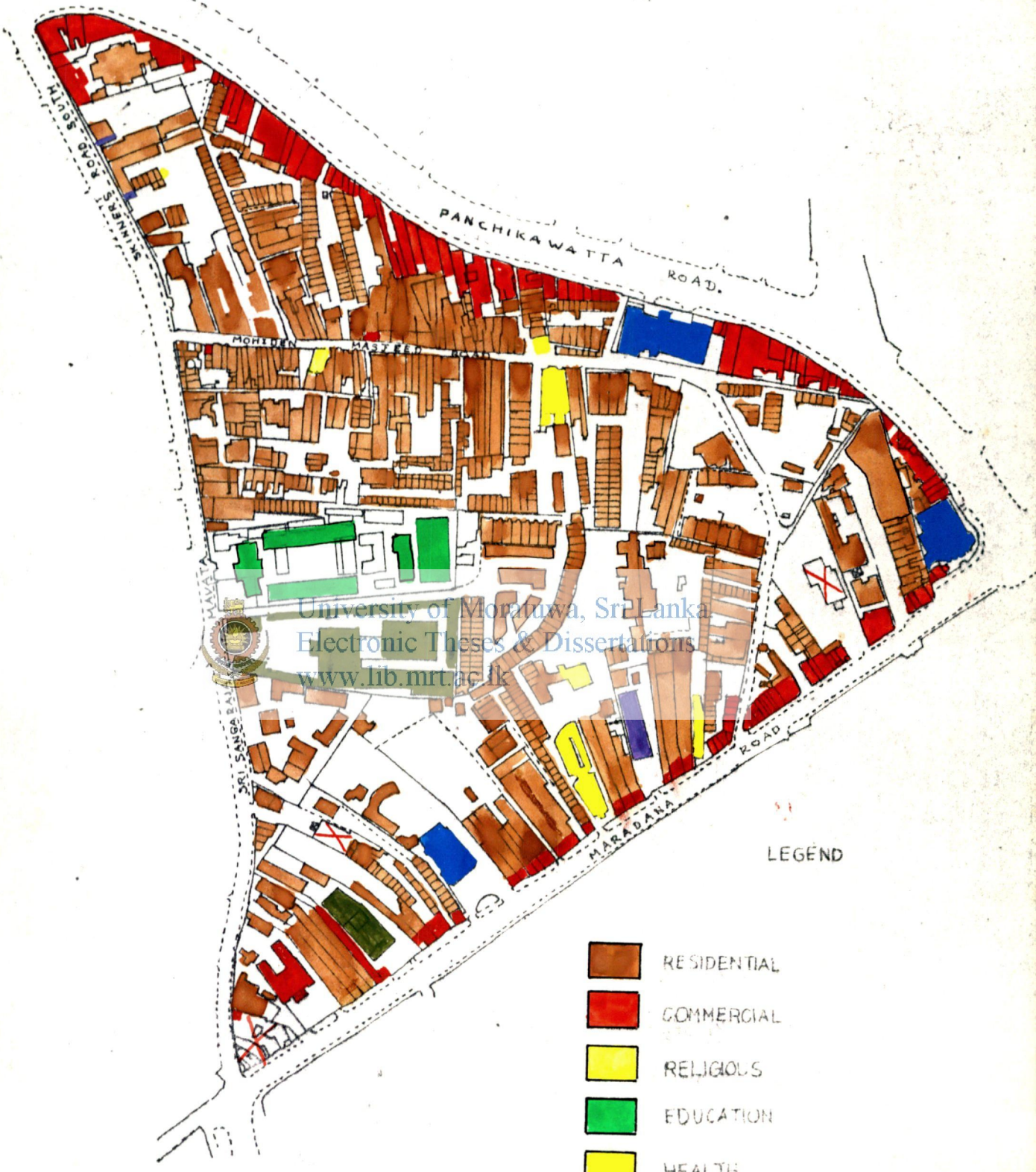
4.1.2 The entire area is congested with predominently single-Storeyed old residential buildings except for a few multi-storeyed commercial buildings.

Housing conditions are generally bad and a large area is covered with rows of back houses and tenement gardens. Old houses have degenerated now in to slum conditions.

4.1.3 Majority of the people of this area use communal water taps and toilets because of the inadequacy of services.

Vacant spaces of the area are polluted with garbage in which many of the children play.

EXISTING LAND USE



PANCHIKAWATTA AREA.
scale: 4 chains to one inch.

MAP NO. 19

4.1.4 There are two major rows of shops along Panchikawatte and Maradana roads. The string of shops along Panchikawatte Road, is a centre for motor spare parts while the string along Maradana Road represents a mixed commercial character.

These rows of shops are not connected to the residential area behind. The shops are privately owned, relatively well maintained with their road frontages and are not included in the study.

4.1.5 An overall picture of some of the basic problems can be discussed as an introduction to further understanding of the major problems of this area.

These are identified from formation already available.

4.1.6 Population.

The following table illustrates the trends of growth in the City of Colombo and the Panchikawatte area, during the period 1963 and 1971.

TABLE - 14 Population increase and density - Colombo City and Panchikawatte area.

Area	Extent Acres	Population 1963	Population 1971	Numerical Increase	% Increase	Density persons per acre
Colombo City	9166	511740	562120	50680	9.9	61.3
Panchikawatte	64	9871	10282	411	4.2	160.66

Source: Census data - 1963 and 1971 - Department of Census and Statistics

It is obvious that from 1963 to 1971 the increase in City population was 9.9 %. For the same period Panchikawatte area increase was 4.2 % and is much lower than the City rate.

4.1.7 Employment and Household income.

The following table illustrates the employment rate in Colombo City and Panchikawatte area.

TABLE - 15 Employment in Colombo City and Panchikawatte area in 1971

Area Population	Labour Force	Activity Rate	Total Employed	% of total	Total Unemployed	% of total
Colombo City 562120	258893	46.0	178594	31.8	86299	15.3
Panchikawatte 10282	6046	58.6	2635	25.6	3411	33.1

Source: 1971 Census Reports - Department of Census and Statistics

Following information compiled from the 1971 census data relating to Panchikawatte area will further explain the gravity of the problem.

1.	Total population	10283
2.	15-59 Working age group	6046
3.	Total No. employed	2635
4.	Male Population 15-59	3526
5.	Male No. employed	2508
6.	Female population 15-59	2520
7.	Female No. employed	127
8.	Percentage of employed	43.6
9.	Activity rate	25.6
10.	Male activity rate	44.3

11.	Female activity rate	2.7
12.	Male employed % to 15-59	71.1
13.	Female employed % to 15-59	13.8

4.1.8 Housing.

Panchikawatte area characterises one of the worst housing conditions seen in the City; congestion, slum tenements and shanties.

Majority of permanent structures are dilapidated and are over 75 years old. Slum tenements constitute the majority of the housing units and are grossly unsatisfactory for human habitation.

4.2 Preliminary Study.

4.2.1 In order to identify the specific problems of Panchikawatte area it was decided to conduct a survey before formulating a questionnaire. It was very important to have an understanding of the people of study areas, their living patterns, economic problems, etc.

4.2.2. This would help to frame the questionnaire in a way that would record the aspirations, resources and problems of the people. Moreover, physical details of the land use map and other observations used in compiling the map, were insufficient to guide towards a satisfactory formate.

Because of this situation, background information of the area was obtained through discussions with people and informal leaders of the area.

4.3 Formulation of the Questionnaire.

4.3.1. A questionnaire was formulated and the questions were framed so as to record existing conditions preferences and priorities in following sections:

1. Social structure of the Household
   Race and other details of the family, etc.
2. Employment -
   By type, place, income etc.
3. Physical structure of the building.
   Condition, age, space, etc.
4. Education.
5. Utility Services.
6. Occupants' needs and priorities.

4.3.2. Before the commencement of the actual survey the questionnaire was tested with few households selected at random in order to check its ability to record the type of information that would prove useful in helping the survey.

A copy of the questionnaire is annexed in the Appendix 1.

4.4 The Survey.

4.4.1 Because of the largeness of the selected area and the limited time, handling a 100 % survey without assistance was beyond the capacity of an individual. Therefore, as a solution the 100 % survey was carried out with some officials of the Department of Assessors and ~~the Department of Assessors and~~ the Department of Municipal Engineer's of the Colombo Municipal Council.

A summary of the existing situation given below, will be followed by the detail analysis of the survey.

TABLE 16 - Summary of the range of existing situation.

Extent of land		35 Acres
Total population		10,583
No. of households		1,650
Total No. of residential units		1,284
Total No. of non residential units		421
No. of houses:	Good quality	40
	Fair quality	423
	Poor quality	821
Household size:	Average	6.2
	Largest	20
	Smallest	1
Floor Area per person:		
	Average	36 Sq.ft.
	Largest	251 Sq.ft.
	Smallest	9 Sq.ft.
Age of Buildings:		
	Average	71 years
	Oldest	100 +
	Latest	1
Monthly household income:		
	Highest	Rs. 3,500
	Lowest	Rs. 80
Monthly per capital income:		
	Highest	Rs. 500
	Lowest	Rs. 21

4.5 Population.

4.5.1 Population is enumerated under following age groups to facilitate the analysis of respective group characteristics.

Age group:

0-4 : Infants & children below school going age

5-14 : Children of school going age

15-59 : Working age group

60+ : Retirement age

Table 17

TABLE 17 - Population of theselected Area.

Age group	Total	%	Male	%	Female	%
0 - 4	1233	11.6	621	-	612	-
5 - 14	2607	24.6	1256	-	1351	-
15 - 59	6132	57.9	3666	33.6	2566	24.2
60 +	611	5.7	319	3.0	292	2.7
Total -	10583		5762	54.4	4821	45.5

Note: Percentages are with references to total population and are given only wherever necessary.

4.5.2 Population pyramids of the following areas were drawn conforming to the above group structure.

1. Colombo Municipal Council area.
2. Panchikawatte area.

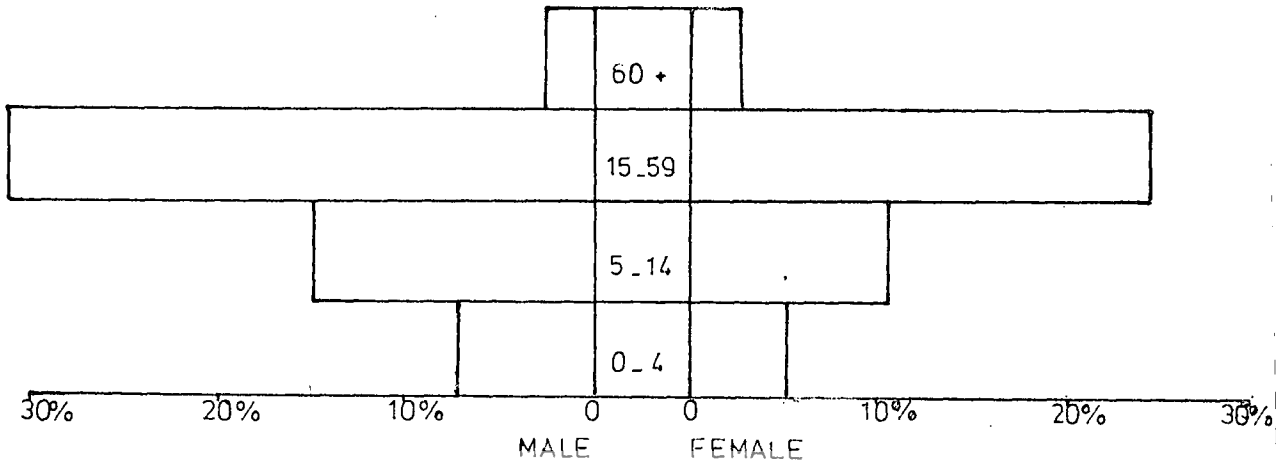
The population pyramids of the selected area represents the existing population structure and gives an obvious description of it. The working age group of this area represent the majority whereas the younger age group representation is very low.

In order to assess the disparities between the pyramids they are presented together in Fig. 5

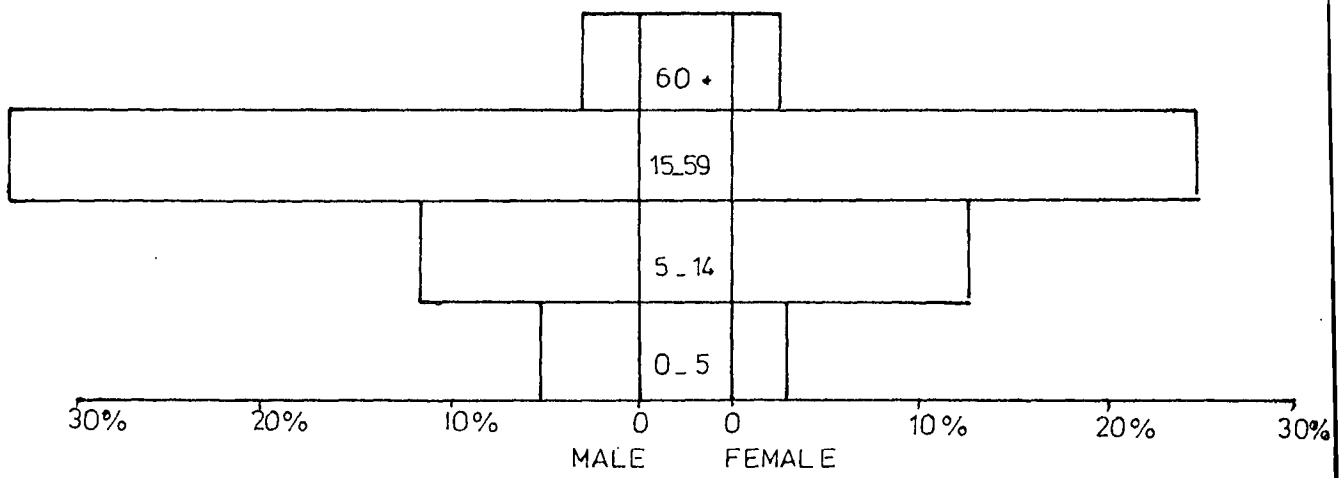
There is a conformity between younger and older cohorts. The disparity is seen in the middle age cohorts where percentage of the males in the study area is more than that of the City.

This is perhaps due to the large number of men employed in the City are resident in certain parts of the Panchikawatte area and their families being in other parts of the country.

COLOMBO M.C.



PANCHIKAWATTA AREA.



4.6 Household Size.

TABLE 18 - Household Size

1 - 4	%	5 - 9	%	10+	%
209	16	828	64	247	22

4.6.1 As shown in the above table the household sizes of the Panchikawatte area are considerably large with 5-9 member households amounting to 64%.

4.7 Employment.

4.7.1. In this study area there is obviously a mixture of occupation but majority of those working are self employed, manual labours.

It is quite pronounced in this area due to the proximity to City's commercial area.

TABLE 19 - Working Age Group.

Total Population	15-59 Age Group	% of total	Males 15 - 59	%	Females 15 - 59	%
10583	6132	57.9	3566	33.6	2566	24.2

TABLE - 20 -Activity Rate

Total Employed	Activity Rate	Males	Activity Rate	Females	Activity Rate
2701	25.1	2566	44.6	140	2.8

4.7.2 Of those who are employed only a small percentage have permanent employment. Most of the self employed people are dependent on a daily income and on the employment opportunities available in the nearest inner City area.

TABLE 21 - Status of Employment

Total	Permanent	%	Temporary	%	Casual	%	Self employed	%
2701	392	14.5	1039	38.4	227	8.4	1043	38.6

4.7.3 In this area out of the 2701 employed (25.5 % of the total population) 1043 (38.6 % of the employed) being to the category - self employed. This category includes those who are manual labourers with a regular work pattern and those who are involved in an independent occupation. The general employment pattern of the self-employed worker depends on the way the work places operate their day to day activities. Therefore, most of those workers have their work places in the closeby markets, shops, grocery stores, etc.

In addition to the self employed people of the above type there are others like pavement hawkers, gramsellers, coolies and cobblers in the area.

4.7.4 There are the low income temporary job holders like unskilled mechanics, tailors, etc. who are relatively better employed than the others in terms of job security.

The survey further revealed that the housewives of the low income groups are occupied with jobs like pasting paper bags, fixing labels to small packets of spices, beedi and shelling raw ground nuts, etc. on a commission basis. This labour intensive operation brings an income of about Rs. 5-10 per day per family, or even more. However, these employments are not available daily and are very much dependent on the market.

4.8 Unemployment

4.8.1 There is a high rate of unemployment in this area as shown in the following table.

TABLE 22 - Unemployment

Total working age group	Total Unemployment	%	Males Unemployed	%	Females Unemployed	%
6132	3431	55.9	1005	29.2	2426	70.7

4.8.2 The survey revealed that only very few of the unemployed have a skill or higher education.

The following table explains the percentage of educational levels among the unemployed.

TABLE 23 - Educational levels of unemployed.

Skilled	Unskilled	Educational Levels			
		Grade I-V	Grade V-X	Higher Education	Technical Education
21-5%	78.5%	33%	12%	1.2%	0.4%

The percentage of dependants is also very highe in this area and it adds another burden to poor families by decreasing their per capital income.

4.9 Household income

4.9.1 Almost half number of families in Panchikawatte area live below subsistance level i.e. A per capital income of less than Rs. 60 per month.(1)

Table 24 illustrates the percentage living below subsistance level and this can be attributed to the high unemployment rate in the area.

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(1) Annual Report - Economic Research Department, Central Bank of Sri Lanka - 1970.

TABLE 24 - Household Income

HOUSEHOLD INCOME PER MONTH				PER CAPITAL INCOME PER MONTH			
Less than 400/-	%	More than Rs. 400/-	%	Less than Rs. 60/-	%	More than Rs. 60/-	%
1109	67.2	541	32.7	868	52.6	782	47.3

4.10 Mode and Distance of travel to work.

4.10.1 As described earlier the majority of employment of this area belong to the temporary and self employed categories.

They usually find their jobs in close proximity to their home. The following tables illustratetheir mode of travel and the distance to their working places.

TABLE 25 - Mode of Travel

Bus	%	Train	%	Foot	%	Other	%
1318	48.2	81	2.9	1187	43.4	144	5.2

TABLE 26 - Distance to place of work

Below 1/2 mile	1/2 - 1 mile	1- 1½ miles	More than 1½ Miles
61%	20%	12%	7%

4.11 Housing.

4.11.1 The housing conditions of this are identified by dividing them in to three categories - "good" "fair" and "poor" as specified.

Good : Waather proof, not in need of structural repairs new building or evidence of regular maintenance.

Fair: Some large degree of protection from the elements in need of simple non major repair or maintenance.

Poor: In need of total replacement or major renewal.

TABLE 27 - Condition of Buildings

Good	%	Fair	%	Poor	%
40	3.1	423	32.9	821	64.0

4.11.2 Out of the total housing units more than 92% are permanent structures. But a large number of permanent housing structures are more than 70 years old and are dilapidated.

Almost all the houses are two roomed single storeied and of wattle and daub construction. Some of the houses are of stone and mud plaster.

Though the majority of houses have tiled roofs there are a few having asbestos and tin sheets.

Little attention has been paid to the condition of houses which has deteriorated very badly. 64 % of the houses were identified as poor houses which need total replacement or major renewal.

Non of the houses could be termed good in terms of their whather protection structural stability and regular maintenance.

In some cases the occupants have repaired walls and parts of the building which were about to collapse.

Since occupation most of the families have grown in size and to accommodate the growth later additions have been made, an extra room or kitchen constructed out of tin sheets.

4.11.3 Except for the ventilation in front almost all the houses have no through air movements. Families in the slum tenements occupy single rooms and use a common toilet. Waste water from the houses and toilets flow down without proper drain. The shanty houses which provide little protection against weather and in some cases almost open to the sky.

The houses are congested and provide little space for domestic activity. The available area for a person is very small as scheduled below:

TABLE - 28 Floor Area per person (inF^2)

0-30 F^2	31-60 F^2	61-80 F^2	More than 80 F^2
45 %	37 %	8 %	10 %

4.12 Occupation.

4.12.1 Majority of the building units of this area have been rented out to the occupants and the number of owner occupied units are very limited as shown in the following table.

TABLE 29 - Occupation

Rented	Owned	Other
44.1 %	25.2 %	30.7 %

4.13 Services.

4.13.1 The entire area has been suffering from the insufficient of utilities such as water, sewerage etc. and the majority of the people of this area depend on communal toilets and communal water taps because of the lack of separate water and sewerage connections.

Although this area is belssed with a main electricity distribution system the majority of the housing units depend on kerosene for lighting.

The available services can be seen in the table below which illustrates the percentage of utilisation.

TABLE 30 - Water, Sewerage and Electricity

Water		Toilets		Lighting	
Communal	Separate	Communal	Separate	Electricity	/Kerosene
79.3%	20.7%	86.7%	13.3%	43.6%	56.4%

4.14 Education.

4.14.1 Sri Sangaraja Madya Maha Vidyalaya (a Central College) is located in this area and is open to children from other adjacement areas as well. In addition to this school several senior and junior schools are located close to this area.

TABLE 31 - Children and School Attendance.

Population 5 - 14		% of 5 - 14 Attending School	
Male	Female	Male	Female
1256	1391	69.2	66.1

4.14.2 Most of the parents attributed non schooling to poverty. Although the Government issues free books to children poor parents hardly can meet other demands such as compulsory uniforms, etc.

At this stage bous drop out of school mostly due to the insufficient household income which does not meet the school needs, and tend to take to some form of employment which may also help them contribute to family income. Edler girls drop out of school particularly due to the attitude of parents who do not encourage a girl to continue schooling on attaining age.

Table 32 - Reasons for non schooling.

% of Males Not schooling	% of Females Not Schooling	Reasons for non Schooling		
		poverty	Sickness	Indifference
36.8	33.9	86.0%	12.0%	2.0%

4.15 Observations other than those recorded in the questionnaire.

4.15.1 The questionnaire was able to record only specific physical and socio-economic information. But many people of this area has problems of confidential nature which under normal circumstances would not have been disclosed

4.15.2 A brief summary of such problems given here will better understanding of the condition prevailing in the area. Poverty is the normal and only obvious picture of the social characteristic of this area.

Sometimes poor families have sold whatever they received on the ration cards as a partly solution owing to acute poverty.

4.15.3 Some unemployed people have been addicted to illegal business affairs such as selling illicit arrack because of poverty due to lack of job opportunities in the existing socio-economic frame.

4.15.4 A shelter in any condition is a great business item in this area, where people have to pay a large amount as key money and monthly rents to occupy even a shanty. The monthly rent varies according to the condition of the housing unit but is always unbearable amount to a poor family. Most of the families displayed an unawareness in coping with official procedures and utilising institutional facilities. They are not aware of their legitimate rights in demanding better services. Only very few had some idea as to how they could make use of the available facilities which do not reach them.

4.15.5 In the above discussion the problem that are involved in obsolescence have been highlighted. It was shown that the unemployment has been an acute problem prevailing approximately 56% of the total working age population is unemployed. This unemployment problem was further aggravated by the uncertainity of being employed even is available jobs. It was shown that about 84% of the total employment is falling under the temporary, casual and self-employed catergories. This service unemployment problem essentially let the total household to earning low income. About 67 % of the total household has proved that they are earning less than Rs. 400 per month. The sevearity of low income has to be analysed within the contest of household size. As it was highlighted in the above discussion the household size is considerably large with 5 - 9 member household amounting to 64%. Consequently the percapita income per month of 53% of the total population is not more than Rs. 60 per month. Condition of the buildings was analysed and it was discovered about 64% of the total buildings are falling under poor condition.

In addition to above problems lack of social and physical infrastructure facilities are contributing much to make these problem more acute. Inadequate water connections, lack of adequate sewerage facilities and electricity cómanding higher significance. Therefore the problem of obsolescence seems not to be a one diamentional problem but it is a synthesis of numerous physical, social and economic problems. Hence it can be concluded that the obsolescence is a multidiamentional problem.

In the light of the above analysis of problems that are connected with obsolescence, it was possible to shift on to the next stage of setting objectives through analysis of occupant needs, available resources and constraints.

4.16 Analysis of Occupants Needs

4.16.1 As it was mentioned in the paragraph 4.3.1 the analysis of occupant needs resources and constraints are essential elements of setting objectives, in evolution of Urban renewal methodology. Therefore devotion of this stage for analysing these elements is much logical. Firstly discussion of this stage will be directed to analyse the occupant needs on the basis of occupants priorities, secondly the discussion will be focussed towards analysing of resources and constraints for urban renewed.

From the survey and the informal discussions main needs of the people of this area were identified. Information was obtained on priorities that people assigned to some of their needs.

The range of occupants needs recorded can be divided in to five categories as follows:

I. Housing
II. Environmental Improvements
III. Employment
IV. Health Improvements
V. Social Services.

The schedule of needs presented here incorporate the priorities and the relative importants of the needs expressed by occupants as a percentage of the total

4.16.2 Schedule of Needs.

Need Group and Needs	% of household in need.
HOUSING	
To remain in area	46
Own moderate detached house	51
Own row house	11
Own flat	6
Additional rooms	41
Financial assistance for repairs	21
Material assistance for repairs	6

Environmental Improvements	
More communal water taps	6
Own Water Taps	74
More communal toilets	11
Own toilets	82
Access roads	21
Open space	42
Employment	
Financial assistance for own enterprise	18
Material assistance for own enterprise	11
Better jobs	32
Space for commerce	22
Space for industry	11
Health Improvement	
Public Health facilities	12
Health Education	6
Specialist Treatment	4
Social Services	
Vocational training centres	12
Community Centre	31
Charity	8

4.16.3 As the survey was oriented to find out the needs of the community it was able to generate information from the people of the selected area on the various types of resources and constraints of which the occupants are aware.

People expressed their needs firstly in answering to the questionnaire and secondly during the discussions that was encouraged throughout the survey. When they stated certain needs they were asked to relate their knowledge of any constraints that prevented them from obtaining their needs. Moreover, they were asked to mention anything ranging from cash, voluntary service to their willingness to co-operate in a renewal programme.

Most of the resources and constraints affecting a statement of need were recorded during the questionnaire survey of the area and discussions with the people.

According to the records details constraints that effect to the occupants' needs fall in to four major groups.

I. Financial
II. Land
III. Institutional
IV. Social

Having identified the effect of constraints at a theorotical level, it was decided that the implecation of constraints should be discussed in detail so that they could be later intergrated in to the renewal programme of the selected area.

4.16.4 At this point, institutions whose objective and functions are related to urban development were identified. Some of these institutions were selected to find the ways in which they could contribute towards meeting the needs and discussions were held at the institution to find:

I. Resources of finance, technical and material assistance, land service, etc.

II. The procedue and conditions attached to such resources.

Some of the places visited for the above purpose were :.

1. Urban Development Authority
2. National Housing Development Authority
3. Common Amenities Board.
4. Colombo Municipal Council

4.16.5 According to the recorded details and institutional details the following problems which have to be overcome for a successful renewal programme were identified:

Resources for Renewal	Constraints for renewal
Financial	**Financial**
Public loans	Lack of capital
Private loans	High rate of interest
Foreign donors	
Land	**Land**
Existing land area	Lack of efficient space
Institutional	**Institutional**
Urban Development Authority	Ignorance of facilities
National Housing Development Authority	Inefficiency of co-ordination
Common Amenities Board	
Colombo Municipal Council	
Other Public Institutions	
Other Welfare Organisations	
Social	**Social**
Willingness to increase income	No community organisation

4.16.6 Having analysed the basic needs of occupants and the effect of constraints, it was decided to move on to the next stage of identification of the objectives and the process of Urban renewal.

The discussion developed in these stage has revealed that the problem to which people are seeking solutions are much similar to the problem that are analysed in the previous stage. Therefore it can be concluded that the people living in this area are seeking solutions for the problems analysed in the previous stage in terms of physical social, economic and environmental.

In the second part of the above discussion of this stage the constraints and resources have been analysed. Any objective that could be set goint beyond the limit of the resources and constrain would be unrealistic. Therefore the objective of Urban renewal have to be drawn within the limits of available resources and constraints.

Having analysed the occupants needs and priorities and the effect of constraints and resources, it is much logical to move on to the next stage of setting objective for development of urban renewal process.

5. OBJECTIVE OF URBAN RENEWAL

5.1 Urban renewal is comparatively a modern concept in urban planning. The objective of Urban renewal referred to different meanings by different areas of Urban analysts. Therefore this stage will be divoted to discuss the different objectives set in the recent history by different Urban analysts to evolve a realistic objective which fits in to the context of problems that are posed in the study area.

5.1.1 An objective can be define as a vehicle used in approaching towards a goal. Very often a set of objectives is adopted to approach a goal. Therefore compartmentlization of objectives cannot help in approaching the concerted goal.

Recent history of Urban Renewal Projects has witnessed that the objectives set in such projects have been biased to one of these areas, such as physical social, economic environmental etc., that was concern with one aspect of Urban Renewal Programmes.

As was concluded in a previous stage the problems of obsolescence is multidiamentional. Therefore, objectives of an Urban Renewal Programme should also be multidiamentional.

Robert C. Waevar (1) argues on Urban renewal....." must be to get as much economic in pact as possible"

This argument clearly reflect bias of the objective to the economic aspect of Urban renewal.

Such arguments can misguide the objective of Urban renewal programme since the problem of obsolescence requires a multidiamentional approach.

Urban Renewal Authority in Kuala lampur (2) has gone a further step ahead in defining the objective of Urban renewal programme by saying "renewal generally embraces the improvement or addition of necessary intrastructure and utilities in existing structures and the remodelling of older structures. Renewal on the other hand, consists of the erection of new structures on an existing site generally at higher and more economic densities and environmental improvements to an area, including new or improved circulation and utility system as may be needed."

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(1) WILSON - J.Q. (ed) Urban Renewal - New Direction in Urban Renewal - The M.I.T. Press - U.S.A. 1973 - P. 663

(2) Urban Renewal - Annual Report - 1975 - Urban Redevelopment Authority Kuala Lumpur - 1976 - P. 20.

The clear draw back of this definition on this objective is placing a increased emphasis on physical development along while under estimating the value of the social development Urban renewal.

Other than these sectional objective different institutions dealing with Urban development tend to set their objectives to meet their institutional requirements. In this regard Urban Renewal in United Kingdom can be sited as an example.

The Local Authorities in the United Kingdom are the sole Authority being concern with Urban renewal and very often they tend to set their basic objective to get the best redevelopment scheme. To this end the architectural and financial aspect are to play higher importance and being considered together as a part of a single process(1).

Even in this attempt difining of objectives the basic problem that are involved with obsolescence in the area under study have not been given due consideration.

5.1.2 In this regard two experiments had been undertaken with compartmentalized approach in two different countries with different political and economic circumstances.

They can be listed as follows:

(1) Renewal for Downtown Ithaca - New York - U.S.A.(2)

(2) Renewal for the Old City Areas - Karachchi - Pakistan (3).

Renewal for Down Town Ithaca:-

Ithaca's down town has an ideal location serving as a regional shopping centre to the New York State. The renewal plan for the down town Ithaca as proposed by the City Council in 1976, to create a new shopping cantre to be the "heart" of th City and of the region. This new down town has been designed to enrich the life of the community; its residents, businessmen and its visitors. Further the plan has been based on the assumption that the down town represents valuable tax resource for City and should not be allowed to deteriorate from this position.

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(1) Planning Bulletin - No.2 - Redevelopment in Practice H.M.S.O.-P.12.

(2) Renewal for Down Town Ithaca - The City Planning Board - Ithaca - New York - 1976.

(3) Renewal for the Old City Areas - Master Plan for the Karachchi Metropolitan Area - Project No.3 Karachbhi - 1975.

Renewal for the old city areas of Karachchi: Karachchi is one of the major Cities of Pakistan and has suffered heavily from various problems. A Master Plan for Karachchi Metropolitan area was prepared by the Government Of Pakistan in 1975 with the assistance of the United Nations in order to overcome their problems. Goals of the Master Plan have as their aim the reduction of obsolete areas of the Metropolitan area.

The Ithaca and Karachi renewal projects represent common objectives of Uraban renewal. Common objectives of these renewal projects can be identified as follows:

1. To reduce obsolescence.
2. To provide more areas for housing commerce and other activities.
3. To provide adequate facilities.
4. To maximise the tax returns.

The Ithaca and Krachci renewal projects also use a common process to carry out renewal programmes. From the initial stage of surveys the process has continued until the achievement of final needs.

As the above common objectives of this two renewal projects suggest the Ithaca Down Town renewalprogramme had been more concerned with commercial development while the Karachi renewal programme being concerned with social aspects of Uraban renewal programmes.

Although the problem of unemployment plays a crucial role in the problem of obsolescence Karachi Urban Renewal Programme has not eleminated that from their master plan. Therefore, Urban renewal programme in Krachi had not been effective and it has further proved the necessity of multidamentional objectives to guide the action.

The confinemento of Urban renewal programme in Ithaca - U.S.A. to the context of commercial development only is partly due to the economic set up and partly to the rcle of planning agencies in U.S.A. "In America the entire Urban Planning process is an independent task of Local Public Agencies of the Federal Government hardly involves itself in its plans." (1) Therefore the Local Public Agencies were mortivated by the objective of Commercial development to raise their tax revenues. This objective inevitably had led the local Public Agencies to eleminate the other significent aspect such as Socal and environmental.

Although the Ithaca down town renewal programme is a result of an independent decision of the Local City Planning Board the Karachchi renewal Programme seems to be a shadow of political decision of the Central Government. Therefore the objective of gaining Socail benefits has become the main objective of the Karachchi renewal programme, because of this biasness of objectives to the socail aspects only the recovery of cost of renewal project was made impossible to the Karachchi Local Authority. This analysis reveals that the falviers of most Urban renewal projects are arising out of the confinement of objectives to the compartmentalized aspect of Urban renewal programmes and that have eliminated comprehensive appraoch toward the Urban renewal projects.

Therefore the objectives of an Urban renewal programme should be able to guide the action which covers the all aspects of Urban renewal problems.

5.1.3 In the light of above discussion and the experiences acquired by many countries, the Urban renewal programmes could be classified into two major groups as follows:

1. Partial Urban Renewal.
2. Comprehensive Urban renewal (Total renewal)

In the above discussion it has been emphasised that the partical development is not holding capability of solving numerous problems connected with obsolescence having origin in many sectors like social, economic, physical and environmental.

The problems involved with obsolescence in the study area reveals that they are having origins in many sectors contributing at various degrees to much severe problems of obsolescence.

(1) Wilson J.Q. (ed) Urban Renewal - New Direction in Urban Renewal The M.I.T. Press U.S.A. - 1973.

The problems of the study area as high lighted in the stage four and the discussion so far development make the point to define the objective of Urban renewal programme in a manner that could reflect the comprehensives of Urban Renewal Programmes.

5.1.4 The Urban renewal is a process of improvement of obsolete city areas consisting of Social economic physical and environmental conditions, where by the benefits of metropolitan living would accrue to the dwellers living in such areas.

In the light of definition of objectives in the above discussion calls for identification of Urban renewal fundamentals that the planner has to consider the preparation of a Urban renewal programme for the obsolete city area which is under study. These fundamentals are identified through the process of analysis of objectives appearing in a previous state.

5.2 FUNDAMENTAL OF URBAN RENEWAL:

One of the primary concerns of Urban renewal programming is the provision of adequate housing facilities.

Where it is to be resolved by the pfovision of new housing or by the upgrading of existing housing has to depend on how it benefits the Socio-physical standards of the area.

The environmental quality of the obsolete areas has to be improved by providing adequate open spaces and by reducing existing congestion and pollution. Other physical improvements such as the development of infrashructural facilities, etc., have to be embodied in the renewal programme.

As obsolescence constitutes land misus and waste, proposals for rectifying these have to be embodied in the programme.

The Urban renewal progrmme should always deal with the complex social problems of the City dwellers of the problem areas providing opportunities to improving their social standards.

There should also be an appropriate industrialization and commercialization programmes included in the renewal programme in order to develope the existing capabilities of the area, if such potentialities are available.

The mulfifaceted deevelopments envisaged in the making of a Urban renewalprogramme requires a pfofound analysis of problems, resources that are available to solve these problems and constraints for generation of solutions.

In such analysis a rational process of planning is necessary not only to in depth study of problems, resources, and countries but also to generate rational solution with the support of wide public participation

Therefore, the following part of the discussion will be devoted to evolve a rational planning process which is essential in preparation of an Urban renewal programme.

5.3 THE PROCESS OF URBAN RENEWAL

5.3.1 The process of Urban renewal can vary according to the problem concerned, but the general process of Urban renewal can be illustrated as follows.

It is very important to have a general understanding of the existing problems as it provides a fundamental frame work for the selection of an Urban area for a detail study. The process of Urban renewal has to start with a preliminary survey.

5.3.2 Survey: Having selected an area which is in need of renewal, a survey has to be carried out to identify the extent and the nature of the problems involved. The survey would help in the collection of Social, Economic and Physical information of the area to be covered. Community needs and priorities have to be identified during the survey. It also helps to identify resuers and constraints which are offered by the area.

5.3.3 Analysing: At this stage the data already gathered has to be analysed in order to identify the magnitude of the problems and to provide the basis for appropriate action to be taken.

5.3.4 Proposed Actions: Having analysed the nature and the extent of problems, potentials and existing constraints, action can be proposed to overcome the problems identified. Proposals will depend on the social technical, institutional and financial capabilities.

5.3.5 Evaluation of proposals: Proposed actions have to be evaluated:

(a) to identify their suitability to the overall development plan of the City

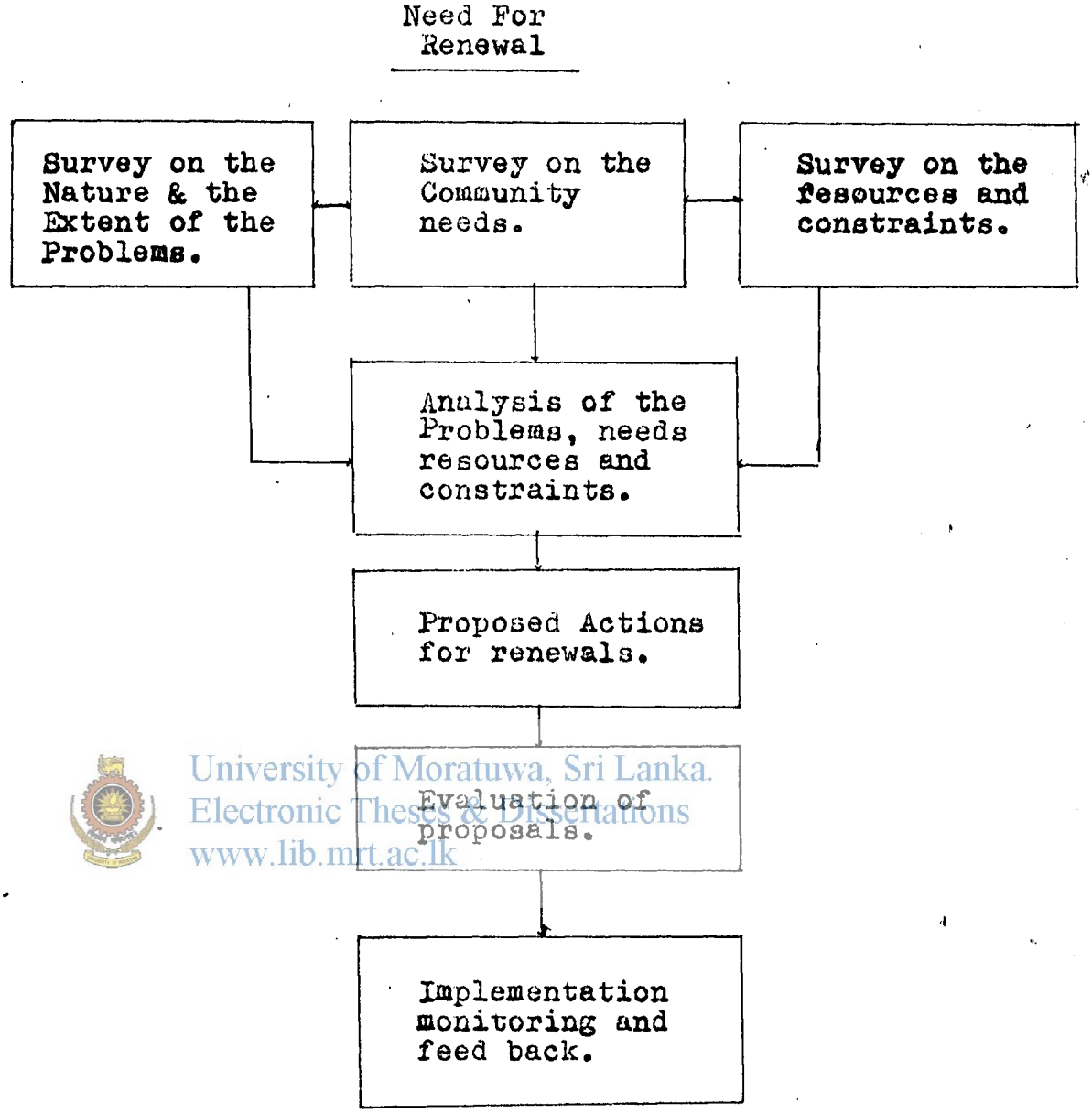
(b) to identify their economic and technical feasibilities - and

(c) to identify the priorities of the programme

Implementation, Monitoring and Fedback: This is the final stage of the process of renewal. Utilisation of resources, implementation, feed back, etc., will be included at this stage (see figure-6)

5.3.6 The plan has to be reviewed continuously alone with its implementation process and the actions should be guided in the line with planned project. Every step of the process of implementing the project has to be checked and necessary changes have to be added to the plan in the case of unforseen constraints are met. Therefore, plan could be subjected to further changes and it should follow the planning process as was made in the first plan.

Fig. 6 - THE PROCESS OF URBAN RENEWAL



5.4 CAPABILITIES OF PLANNING AGENCIES TO UNDERTAKE AN URBAN RENEWAL PROGRAMME

5.4.1 An Urban renewal project has to be formulated through an analytical process such as the planning process evolve in the above discussion. In formulating such a project in a way was analysed will be possible in a context of urban Government having capability of proceeding such project through an analytical process. Therefore, the feasibility of undertaking such Urban renewal programme to a large extend depend on the capabilities of planning agencies. Because of this the following part will be discussing the powers and functions of different planning agencies that make formulation and impelementation of Urban renewal programme possible.

5.4.2 Following agencies will be dealt with reference to their functions and powers to carry out and implement the Urban renewal programmes.

A- Urban Development Authority

B- National Housing Development Authority

C- Colombo Municipal Council

D- Common Amenities Board

E- Other Agencies

5.4.3 URBAN DEVELOPMENT AUTHORITY

This authority was formulated by the Minister to undertake the integrated plan and implementation of such plans in order to achieve physical, economic and social development in such areas declared by the Minister of Urban Development Areas(1)

The powers and functions vested in this Authority make possible the undertaking of planned development in its jurisdiction. In its development areas this authority is empowered to "carry out integrated planning and phsyical development within and among such areas....(2)

Since the Urban renewal programmed as examine in the above discussion is being an integrated development including social economic physical and environmental aspects. The provisions 8A of that act clearly empowered to U.D.A. to undertake such projects.

More over different components synthegized the Urban renewal project

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(1) Urban Development Authority
(2) U.D.A. Act No.2 of 1978 - Section - 8A.

Like residnetial, commercial, clearance of slum and shanty areas and development of environmental standards in an Urban renewal project necessarily require clearly defined powers to be attached to such agencied. In this respect Urban Development Authority is empowered by its respective Ordinance to "implement related programmes of development works, activities and services in such areas that are consistant with integrated planning,.....(1) to "formulate and submit development plans including capital investment plan to the Minister for approval by the Government..."(2) to "formulate and implement and execute an Urban land use policy...."(3) to..."formulate and execute housing schemes in such areas..."(4) and to "cause the clearance of slum and shanty areas...."(5)

If any Government Agency is interested in undertaking an Urban renewal programme which can make a request to the Urban Development Authority to prepare ".... development project and planning schems on behalf of such agency and tc cordinate and supervise the execution of such projects or scheme" (6)

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(1) U.D.A. Act No.2 of 1978.....Section - B
(2) U.D.A. Act No.2 of 1978.....Section - C
(3) U.D.A. Act No.2 of 1978.....Section - I
(4) U.D.A. Act No.2 of 1978.....Section - M
(5) U.D.A. Act No.2 of 1978.....Section - N
(6) U.D.A. Act No.2 of 1978.....Section - O

Very often Urban context where different Government Agencies are functioning with different interest in undertaking development projects, the problem of cordination arises. The same problem has long been evedent in Sri Lanka and an attempt was made in this act to voercome that problem. The Urban Development Authority Act empowers the Athority "to approve, cordinate and control development projects or schemes of any Government Agency in such areas"(1) As far as these functions are concerned it is apparent thae Urban Development Authority can undertake Urban renewal programmes and such programmes can be formulated through an analytical process such as one that evolved in a previous stage.

An Urban renewal project will not get on to the ground unless it is implemented by a Government Agency which is empowered by its respective Ordinace with necessary Legal powers. In this respect Urban Development Authority is holding immence powers to implement such development projects in development areas. The U.D.A. Act empowers the authority "to undertake execution of development project and its schemes as may be approved by the Government"(2)

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(1) U.D.A. Act No.2 of 1978 - Section P
(2) U.D.A. Act No.2 of 1978 - Section 8C

In addition to this U.D.A. is vested with power to "implement development plans and capital investment plans...(1) which is essential to facilitate the implementing such projects.

Infrastructure development proposals involve in Urban renewal project can be implemented by only the agencies that are having powers to implement them as well as to formulate capital improvement projects. For this end U.D.A. is empowered by the Act to formulate capital improvement programmes"(2)

Up to the time of Urban Development Authority being formulated there had not been any Government Agency with sole power to implement development project with the collaboration of private sector entreprenuer. In this respect the U.D.A. was given the power" to enter into any contract with any person for the

execution of development projects and schemes as may be approved by the Government" (3)

The Urban Development Authority can function in the context of Urban Development not only as a planning agency but also as a development finance agency. It can raise necessary funds through its own sources as it is empowered"..... by way of temporary loan on the subsecti n (1) by the issue of debentures.(1)

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(1) U.D.A. Act No.2 of 1978 - Section G
(2) U.D.A. Act No.2 of 1978 - Section H
(3) U.D.A. Act No.2 of 1978 - Section E

5.4.4 National Housing Development Authority

This authority was formulated in 1979 with the objects of".... construction of flats, houses and other living accomodation or buildings" (2) Formulating schemes"... to establish housing development projects in order to alleviate the housing shortage"(3) Causing "the clearance of slum and shanty areas..."(4) and of "promoting housing development"(5) In addition to this objectives there is another objective of N.H.D.A. "to develop or re-develop lands for the carrying out of any of the objects of the Authority" (6)

This authhority is empowered to undertake planning and implementing the projects for "the erection conversion improvements and extension of any flat, house or other living accomodation for any building for residential purposes"(7) This provision is higher significance as it gives the power to the authority to undertake the planning and implementation of ungrading schemes.

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(1) U.D.A. Act No.2 of 1978 - Section 11(2)
(2) N.H.D.A. Act No.17 of 1979 - Section 4(a)
(3) N.H.D.A. Act No.17 of 1979 - Section 4(6)
(4) N.H.D.A. Act No.17 of 1979 - Section 4(c)
(5) N.H.D.S. Act No.17 of 1979 - Section 4(d)
(6) N.H.D.A. Act No.17 of 1979 - Section 4(e)
(7) N.H.D.A. Act No.17 of 1979 - Section 5(a)(1)

Similar functions were vested with different planning agencies which has created a considerable complecations in operation of planning agencies the present context of Urban development. N.H.D.A. is vested with power to undertake "the clearance and redevelopment of slums, shanties, tenements and other building with are conjested and unsightly or in sanitary" (8) and this can be compared with the similar function vested with the Urban Development Authority as "to cause a clearance of slum and shanty areas and to undertake the development such areas"(9)

This conflict among planning agencies was given due consideration by including a provision of Urban developemnt Authority Act giving powers to the Authority as follows. "Where any area has been declared to be a development area the Minister may by order published in the Gazette declare that any planning scheme or project in a development area under the provision of Town and Country Planning Ordinance or under any other enactment which is in conflict with any development project under the provision of this law shall cease to operate in that area"(10)

(8) N.H.D.A. Act No.17 of 1979 - Section 5(a)(3)

(9) U,D.A. Act No.2 of 1978 - Section 8-N

(10) U.D.A. Act No.2 of 1978 - Section 23 Sub section 1

The N.H.D.A. can function not only as a planning agency but also as an executive agency as well as residential development financing agency. It also possess the power "to obtain loans on such terms and condition as may be approved by the Minister for the purpose of carrying out anyof its objects"(1)

The N.H.D.S. can raise the funds through the similar sources as U.D.A. can do. In this respect N.H.D.A. is empowered to ".... borrow money, otherwise than by way of temporary loan under sub-section - (1) by the issue of debentures.... (2) This provision is great advantageous of carrying out housing developemnt schemes.

(1) N.H.D.A. Act No.17 of 1979 - Section 5 (J)

(2) N.H.D.A. Act No.17 of 1979 - Section 26(2)

5.4.5. Colombo Municipal Council is empowered by respective Ordinance, by-laws and by other Ordinances which have vested the power with Municipal Councils to carry out certain functions which are prescribed by these Ordinances(3)

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(3) Town and Country Planning Ordinance - No.13 of 1946 - Housing and Town Improvement Ordinance and Municipal Councils Ordinance No.29 of 1947

Colombo Municipal Council can continue operation of its functions of Urban development with subject to the planning approval of Urban Development Authority. This implies under the Section 23 of the U,D.A. Act, that the Urban Development Authority can get Urban Development Projects implemented through the Municip al Council. Therefore, Colombo Municipal Council is holding the ability of undertaking and implementing the Urban renewal projects with the collobaration of Urban Development Authority.

5.4.6. Common Amenities Board

Since the ceiling on housing property Law (1) enacted by the Government excess housing properties were vested with the Department of National Housing and the Department of National Housing was incapable of doing maintenance of common amenities belong to raw houses and other slum gardens. Therefore an authority was formulated by the Government in order to maintain these common amenities and to provide common amenities for such houses at the request of residents. This authority was called Common Amenities Board which was called and formulated under the law No.10 of 1973.

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(1) Celing on Housing property Law - No.1 of 1973.

This Board is responsible for the provision of amenities including water, sewerage, drainage, gas, electricity and garbage- disposal, as well as the establishment of facilities such as roads and paths.(2)

It was with the re-organisation in 1977 the Board greatly accelerated its programmes constructing or repairing latrines, bathrooms, taps and housing in 142 communities between July 1977 and July 1978 (3).

The only incapability of this Authority is finding adequate funds to provide such facilities for the obsolete areas. Provisions are not made in this Law to act as a receipient of foreign aids though there are nuemerous foreign donor agencies willing to provide funds to up grade such common amenities. In this respect UNICEF has been providing funds in order to undertake common amenity developments in its jurisdiction. But however the UNICEF assistance in the slum and shnty programme is restricted to the City of Colombo (4).

Normal procedure is that the Common Amenities Board design the project where the UNICEF provides funds to implement them.

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(2) Common Amenities Board Law - No.10 of 1973 - Section 5-7

(3) Performance Report - Physical and Financial Programmes - Common Amenities Board - 1980.

(4) ibid

5.4.7. Other Agencies

In planning the Urban renewal projects and their implementation could be undertaken by various other Government Agencies other than the agencies which are mentioned above. These other Government Agencies could be classified in to two categories as follows:

1. Planning Agencies
2. Executive Agencies

Under the category of planning agencies could consider the Department of Town and Country Planning, Tourist Development Board, Department of Highways and Colombo District (low-lying areas) Reclamation and Development Board.

Under the category of executive agencies can consider the National Water Supply and Drainage Board, State Engineering Corporation, Department of Building, etc.,

These other agencies have to operate their functions with subject tothe continuous cordination and planning by the Urban Development Authority.

Above analysis has been forcus to wards an analytical observation of capabilities of planning agencies in Sri Lanka with refernce to the ability of planning and implementing Urban renewal programme which requires involvement of numerous agencies.

It has revealed that the planning agencies as well as the executive agencies have the powers and capabilities in undertaking an Urban renewal programme such as one that has been evolved in the present study.

6. ZONING ALLOCATION

6.1 Having evolved the Planning Process and the Capabilities of Planning agencies this analysis has to be extended further covering the analysis of problems involved in Zonning allocation. This extention in the analysis is rational since it provides the basis to quantify the land requirements leading to preparation of final Zoning Scheme and detail layout plan for the Panchikawatte area.

6.1.1 Before step into the preparation of final zoning scheme and layout plans analysis has to be undertaken to determine the area in which the problems could be solved.

In provision of residential units for the household in need of houses the surrounding development projects and the existing pattern of development have to be necessarily considered. In this regard an eye observation was made and found that the surrounding area is densely crowded with population and physical development. Therefore finding suitable area to be utilized in generating solutions for the problems.

If any area were available in the vicinity the households cannot be relocated since such solutions will force the people afford an increased amount for cost of transport. This increased transport cost would impose some hardships on low income groups in travelling to the working places very often located in centre of the city. Because of this reason people living in this area are not willing to move out of the existing residential area.

Two housing schemes are underway in the vicinity and one of it is reaching final stage. These two housing schemes are Maligawatte Housing Scheme and Lock Gate Housing Scheme. Maligawatte Housing Scheme was undertaken with the idea of providing housing facilities almost for the middle income groups. Even this housing sbheme still could not provide accommodation for the shanty dwellers already occupying land area which is falling under the Maligawatte Housing Scheme. Therefore the solutions cannot be generated for residential problems in other housing projects which are underway in the vicinity.

Since the households in the study area have been living for more than 40 years. They have been used for the Urban living pattern. Therefore this people cannot face any sudden change in the social and physical surrounding which is strange for them. Therefore urban social life has to be assure for them in generating solutions for their problems.

Considering the above facts it has to be concluded that there is no possibility of relocating the low income house holds, which forms largest category of total number of households.

6.1.2. As far as the commercial development in the study area is consern it is apparent fact that the Panchikawatte area is highly specialised for motor spare part business. Even the land values in the prominent areas are much higher than the other areas, in the vicinity. Therefore the commercial development has to be undertaken within the area since the demand for motor spare parts is being allocated by it.

The commercial development in the area to be considered as one component of the urban renewal project and also this commercial development very often is being capable of generating profit and that can be utilized in residential development. This implies the residential development that has to be undertaken together with the commercial development in order to make the residential economically feasible.

6.1.3 Having taken the above facts into consideration the analysis of problems and generation of solutions for them have to be undertaken. Analysis cannot be concentrated only at existing problems but it has to be extended covering the future state of current problems as well. Therefore population projections has to be undertaken in the next step of this analysis.

Table - 33 Population Growth Rate 1963 - 1979

Year	Population	Growth rate	Average Growth rate
1963	9371	--	
1971	10231	.51	.43
1979	10533	.43	

6.2 Determination of growth rate for Projection.

6.2.1 New Development scheme undertaken in Colombo will attract more

people in to Colombo. Therefore migration movement will be increased, with the implementation of following development schemes.

Echelon Square Development Scheme.
Lotus Centre.
Marine Drive.
Pettah Market Complex.
Peliyagoda Integrated Development Project.
Housing Projects.

These projects could increase the informal activities as well.

But on the otherhand there are two major negative factors in the migration. The first one is increasing cost of living. (table 34 ...). According to the Central Bank reports cost of living in Colombo has been increased and living in Colombo has become more expensive.

Table - 34 - Cost of living index Numbers - Colombo

November 1938 April 1939 - 100

Period	All Items
1963	305.7
1965	316.1
1967	3 22.6
1970	388.3
1974	522.0
1976	563.9
1978	640.2
1979	708.9

Source - Department of Census and Statistics and Central Bank of Ceylon.

Increasing land value can be considered as the second negative factor in the imigration (table 9).

On the above analysis the future population growth rate could be set at .4% and the population projections can be done for future 10 years as reveals in the following table.

Table - 35 Projected Population

Year	Population	Growth Rate	Average growth rate	Projected Population
1963	1871	--		
1971	10281	.54	)	
1979	10583	.4	) .43	
1990	-	--	--	11014

The provision of housing units has to be assessed on the basis of No. of house holds. The average house hold size in this area is 6.2. Therefore the projected No. of house holds can be estimated as follows.

Table 36 - Projected No. of House holds

Projected Population	H/H Size	Projected No. of H/H
11014	6.2	1776

Source - Estimated.

As it was analysed in Table 27 majority of the housing structures are in poor condition and there are only few newly constructed houses (40 units) in the entire area which implies the construction rate is remaining at a lowest position. Therefore total housing units required has to be provided by the renewal project and also the total shortage of housing units including backlog can be estimated as reveals in the following table.

Table 37 - Housing Shortage

Backlog in 1979	Projected No. of Housing Units - 1991	Shortage of Housing Units
366	1776	2142

Note:- It was assumed that a housing unit has to be provided to each H/H

In addition to this existing poor quality housing units will reach to the decaying position requiring new constructions of housing units. Then the total housing requirement would be (2142 + 821) 2963 units.

6.2.2. The table 16 already has revealed that there are 463 housing units falling under good and fair conditions which should not be replaced by new construction as they will be capable of providing accomodations for the present people even after a period of 10 years time. In addition to this approximately 60% of housing units that were considered as bad condition could be upgraded considering the burden likely to be placed on the capital budget by undertaking more expensive direct construction of houses.

6.2.3. The number of housing units to be upgraded was identified by using following three criteria.

- Existing floor area
- Physical condition of the building, and
- Affordability of house holds for housing rent

In some bad condition houses the present floor area is totally inadequate in relation to the house hold size. Though the physical condition of these houses have been considered as poor to a certain extent they are capable enough to provide more floor area for the people through an upgrading scheme. Such houses could be selected for upgrading by using floor area criterian with subject to the other two criteria as well.

Some housing units where physical conditions are considered as poor can be brought up to the habitable standards by giving structural repairs to them instead of undertaking major direct reconstruction of housing units. In order to identify such housing units physical condition criteria was employed with subject to the other two criteria.

Although above mentioned two criteria were satisfied poor level of affordability for housing among prospective dwellers living in the study area could restrict the direct reconstruction of houses as they are more expensive. Therefore affordability for housing was selected as a criterian in selecting of housing units for upgrading as well.

In the light of above analysis on estimating of housing needs the require d housing units to be constructed in 10 years hence could be estimated as follows

Table: 38 No. of housing units to be constructed.

Projected total Housing Units -			
that is required in 10 years time	...	...	2963
Less			
Existing Good Housing Units	...	40	
Existing fair Housing Units	...	423	
Improvable Housing Units	...	500	963
Total No. of Housing Units			
to be constructed	...	... ...	2000

Source :- Estimated

6.3 Constraints for Residential Development

6.3.1. Provision of 2,000 Housing Units with adequate habitable floor areas is severely restricted by following adequacies.

i. Lack of adequate land area

ii. High price of Urban lands that are likely to attract highly profitable commercial uses.

If the horizontal development is accepted, the total land area required for housing the 2,000 house holds will be 34 Acres.

This estimate was based on the Public Health Standards prescribed by the Public Health Act of the England & Wales (1)

As the Public Health Act of the England and Wales prescribed the total land area required for 2,000 housing units is estimated in the following table:

(1) See appendix - II.

Table 39 - Required Land area for a Horizontal Development

Total Housing Units required	...	2,000
Standard floor area per person	...	80 Sq.ft.
Total floor area per 6.2 persons h/h..		496 Sq.ft.
Open land area per housing Unit (1/3).		248 Sq.ft.
Land area required per housing unit	...	744 Sq.ft.
Total land area required for 2,000 housing units (in acres)	...	2000 x 744 / 272.55 = 34.16 Acres.
Total land area available	... ...	35.5 Acres

Source - Estimated

Above table apparently proves the first constraint suggested in the above discussion that imposed on horizontal residential development. This requirement alone needs 34 Acres approximately with providing no space for commercial and other uses that possess a high degree of potential of generating adequate net income in order to ensure the highest utilization of urban lands.

6.3.2. A recommendation regarding housing density within Colombo Municipal Council Area suggested in "An out line plan for Municipality of Colombo appreciate a low density of housing as "total land area used is 850 Sq.ft. including the access and amenity space. This gives over 50 units per acre - a net density in excess of 300 persons per acre at an occupancy rate of 6 persons per house". (1).

This recommendation was not simply handed down in an absence of thorough study of existing social, economic and environmental aspects of the city of Colombo. As the author himself explains, "some simple mathematical and diagramatic experiments were carried out by the out line plan team taking into consideration life-style, occupancy rate, space standards, internaly and externaly all factors pertaining to the building ordinance access both pedestrian and vehicular and insidental public open space (2)

HISBERT - Lawrie - An outline plan for the Municipality of Colombo - U.D.A. - December 1979
P.36.

6.3.3. Although this standard is fairly higher than the existing density of housing it requires approximately 40 Acres to locate 2,000 housing units in the study area, which is far beyond the practicability within the given circumstances of the area.

6.3.4. This physical constrain could naturaly influence the planners to find out recommendations that accept the high density residential development standards that guide the construction of 2,000 housing units within this limited land area.
In this regard "An out line plan for Municipality of Colombo" has recommended the high density standards as "taking four storey blocks and a basic house with a floor area of 500 Sq.ft., then allowing for circulation, vertical access, fire escape, common drying areas, through ventilation..." (3)

6.3.5 This experiment led the author to recommend high density standards as " over 700 persons per acre at an occupancy rate of 6 are possible. clearly site conditions and the provision of balconies, play areas, etc. would reduce these figures but equally clearly, very much higher densities than have been previously considered are perfectly feasible and in view of the scale of the housing problem, should necessarily be adopted" (4).

6.3.6. The practicability of this recommendation in our study area has to be evaluated in the context of "increasing cost of construction" and level of affordability for housing among dwellers. Therefore land area required for housing 2,000 house holds in the study area is estimated depending on the recommendations made in the above mentioned out line plan.

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(2) NISBERT - Lawrie . An outline Plan for the Municipality of Colombo. - U.D.A. December 1979 P. 35.

(3) i b i d

(4) i b i d

Table 40 Recommended land area for Housing

Total No. of house holds to be housed in 10 years time	2,000
Total No. of people to be housed in accordance with the high density recommendation	700 (persons per acre)
No of Housing Units per acre	113 (H/Hsize = 6 .2)
Land area required to locate 2,000 Housing Units inclusive of open spaa	17.6 Acres

Source - Estimated

This requirement of land area can easily be met in the study area and this proves that the high density standards for residential development is more technically feasible than low density residential ~~units~~ in Urban areas where land is so scarce. But even if the high density residential development is technically feasible affordability for housing has to be evaluated in relation to the cost of high rise development.

The aim of putting valuable urban lands in to highest and maximum utilization would strongly conform the high density residential development as recommended in the out line plan (5) This aim seems to be neglecting the social aspect of urban renewal projects and also as highlighted in preceding chapters the unemployment problem among the residence would not be solved by such aim of highest utilization of land. Therefore the affordability for high density housing has to be evaluated.

6.4 Level of affordability

6.4.1. Level of affordability of housing plays a dominant role in economic feasibility study of high density residential development. Since the Government policy being to reduce the amount of subsidy, the affordable amount for housing has to be estimated in relation to the total cost of construction.

(5) NISBERT - Lawrie - An outline plan for the Municipality Colombo. U.D.A. December 1979

Table 41 - Cost of Construction - Housing

Name of Scheme	Construction Agency	No.of Units	Up to 300 Sq.ft.	300 - 500 Sq.ft.	500 - 800 Sq.ft.	Total Estimated Cost Rs. M.	Cost of One Unit Rs.	Average Cost Rs. *
19th Lane Kollupitiya	Private Developer	204	204			5.500	26,960	))25,522 *
Lock Gate	C.C.C.	142	142			3.420	24,084	)
Sucharitha Mawatha	S.E.C.	32		32		2.800	87,560	))75,530 *
St.Joseph Street	S.E.C.	248		248		15,700	63,560	)
De Mel Garden	S.E.C.	64			64	7,700	120,312	)
Silver Smith Ln.	S.E.C.	57			57	8,640	151,579	)137964 *
Wolfendhal Street	Private Developer	50			50	7,100	142,000	)

Source: Annual Implementation Programme -
Urban Housing - National Housing Development Authority --1980
* Estimated Average Cost.

Therefore the cost of construction is estimated in the following table according to the experience of National Housing Development Authority in construction of housing.

The findings of above table can be summarised as follows:

Estimated Unit Cost			
Up to 300 Sq. ft.	...	...	Rs.25,522
300 - 500Sq.ft.	...	...	Rs.75,530
500 - 800Sq.ft.	...	...	Rs.137,964

6.4.2. The cost estimate of high density residential units has to be carried out considering the above unit cost and house hold size of the study area. The average house hold size in the area under consideration is 6.2, and the necessary standard floor area as reveals in preceding paras, for such house holds could be considered as 500 Sq.ft.

The average unit cost for such housing unit amounts to Rs.100,000 - 137,964. Therefore the lowest figure could be taken up as the average cost for construction of high density housing units in the Panchikawatte area.

6.4.3 If the Government responsible agencies expect to recover the capital cost incurred on high density housing construction within the duration of 20 years period of time at the rate of interest 13% the monthly repayment instalment should be placed at Rs.1200.

National Housing Department determine the amount of housing loan to be granted to the borrowers depending on the level of monthly house hold incom e.

The affordability of loan repayment is considered by the National Housing Department as 24% of house hold monthly income. On this basis the average monthly income of the house hold that is capable of earmarking Rs.1,200 per month on loan repayment could be estimated as follows:

Table 42 - Required Monthly income

Required monthly rent	...	Rs.1,200
Ratio of affordable income on housing (as National Housing Dept. considered)	...	24%
Therefore required monthly income to afford per housing unit	...	$\frac{1200 \times 100}{24}$ = Rs.5,000

Source: Estimated

6.4.4. As above table reveals only those house holds earning Rs.5,000 per month can afford for housing on rent purchase basic but a house hold falling under the income category of Rs.5,000 per month is a very rare case in the area of study. This situation is fatily highlighted in the table - 24.

The next point to be made out of this evaluation is the amount of subsidy made by the Government in order to provide the house holds with high density residential units over the past period of time.
The department of National Housing prescribed monthly rent for high density housing units ranging from Rs.35 to Rs.250 per month.(1)

Taking up Rs.250 per month as the highest rent for high density housing units the amount of subsidy could be estimated as the difference between required rent and the rent being charged, it amounts approximately to Rs.950 per month per unit.

6.4.5. If this amount of subsidy per housing unit is extended up to 2,000 housing units which is estimated as the total number of housing requirement in the area of study amounts to Rs.1.9 m per month. This figure will grow up to Rs.22.8m per annum. The acuteness of this problem would be severely increased as the affordable level for housing is falling far below than Rs.250 per month which is prescribed by the Department of National Housing as the monthly rent. Therefore the high density residential development though they are technically feasible, are not economically feasible.

6.4.6. The analysis up to now regarding different alternative development strategies, such as total upgrading, horizontal residential development and high density development has revealed the fo llowings:

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(1) - Discussion held with N.M.Weerasinghe Asst. Commissioner of Housing - National Housing Department.

727.1(43)

727.1(43)

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208p. ; plates

(i) Though the totally upgrading strategy is economically feasible it would not be a permanent solution to the problems prevailing in the study area. In addition to that decaying physical conditions of existing housing units reduce the technical feasibility of upgrading.

(ii) Though it has been recommended by responsible planning agencies that the horizontal development is appropriate for the circumstances given in the context of Colombo, it is not technically feasible as it requires more land area which is so scarce resource available in the area. If such horizontal development were undertaken the aim of putting valuable urban lands in to maximum economic utilization could not be achieved. Therefore feasibility of both technical and economic is restricted.

(iii) High density alternative was apprised and found that it is technically feasible but economically not at all because it goes far beyond the level of house holds affordability for housing.

6.4.7. In any of these alternatives the subsidisation of rentals has to be accepted. In addition to that to meet the future housing requirements in the area of study a better combination of each alternative has to be evolved and if necessary a cross subsidy system has to be undertaken by potential lands putting in to profitable uses such as commercial development.

6.5 Commercial Development

6.5.1. Since a total urban renewal programme requires every aspects to be renewed the commercial development assumes a key role in a dilapidated area located closer to the city centre. The preceding stage has been develved to evaluating and drawing of solutions for housing problem in the area under consideration. In order to achieve the objective of total urban renewal benefits the problems and prospects of commercial development have to be evaluated. Therefore the following part will be devoted to analysing the problems of commercial development which is capable of providing possibility of cross-subsidising the housing scheme.

6.5.2. The commercial development seems to have originally developed as a motor spare parts selling centre. Growth of such development was followed by other commercial activities and today its state of development is composed of following major commercial activities.

i. Motor spare part shops and light engineering works
ii. Hotels and groceries
iii. Cinemas and entertainments

6.5.3. The demand for motor spare part could be influenced at national level and local level since the Panchikawatta area originally developed and specialised for providing motor spare parts.

Therefore national causes as well as local causes of demand have to be analysed in order to quantify the necessary floor area for motor spare part shops. The development of motor space part business is largely depending on total number of vehicles available within the economy and on the rate of growth of import of motor vehicles in to the economy.

At the local level the rate of development in motor spare part business will be largely determined by the special distribution of vehicle owners as it creates the demand for local spare part business. Therefore growth in import of vehicles in to Sri Lanka during the past two three years have to be analysed in order to project the future import of vehicles. In addition to that the ratio of vehicles that are registered in Colombo District to the total vehicles available in the country has to be examined.

Table 43 - Motor Vehicle Registration

	1974	1975	1976	1977	1978	1979
All Motor Vehicles	191962	194972	199660	208026	231993	274080
% increase over previous year	-	1.6	2.4	4.2	11.5	18.1

Average Rate

The average rate of increase from 1974 to 1979 ... 7.6%
The average rate of increase from 1975 to 1979 ... 9.1%

Source: Traffic and Transport Demand Estimate Colombo Central Area 1979 - 1986 - U.D.A. 1980 - P.21.

6.5.4. The increasing number of vehicles in the Island during the past five years time is a good sigh of thriving motor spare part business. The important feature of increasing number of vehicles was the propotion of number of vehicles registered in Colombo District to the total number of vehicles in the Island . It amount up to 60% (1)

As the above table reveals the averate rate of increase in import of vehicles since 1975 to 1979 amounted up to 9.1% which can be considered as a higher rate of growth when it i s compared with the previous growth rate which was in the line of 7.6%. This growth in the total number of vehicles in the Island may have increased the proportion of vehicles registered in Colombo.

6.5.5. Though there is not a proper study conducted to estimate the growth rate at which the number of spare part business is growing in relation to the growth taking place in total number of vehicles, it is much rational to assume that the growth in total number of vehicles at national and local levels has a close link with the rate of growth in motor spare part business.

The growth that taken place in total number of vehicles in the Island could maintain the increasing profitability of motor spare part business over another couple of yrars since the motor vehicles requires spare parts through out their economic life. Therefore the Panchikawatta area could be largely influenced to develop in terms of motor spare part business by increasing number of vehicles in the Island and the ratio of vehicles registered in Colombo District which is being fairly high.

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(1) Registration of Motor Vehicles - Annual Report
Department of Motor Traffic - 1979.

6.5.6. If there had been positive factors to influence the import of motor vehicles during the past four years time it reveals an unusual growth rate since the Government policy of liberalising the national economy . This growth rate cannot be assumed to be continuing over the next 10 years time due to the following factors:

(i) Since the deficit in the balance of payment started to at an alarming rate the Government tends to reconside the liberalised economic pllicy. If such gap is not bridge the import of luxury items could be curtailed in order to cut down the import expenditure. The sources of foreign income earning have not yet shown any satisfactory signs of increasing export earnings. Therefore, the same growth rate that was taking place during the past(5)five years time cannot be assumed to be prevailing over the next five years time.

(ii) Increasing price of petrol had playedaa deterrent effect on petrol consumption that may result in cutting down of number of trips made in private vehicles. This feature was clearly reflected in a reduction of Petrol consumption during 1978 to 1979.

Table 44 - Price and the use of Petroleum products in the Transport Sector

	1974	1975	1976	1977	1978	1979
Price of Petrol (in Rs. per gallon)	6.55	12.50	13.30	20.00	30.00	37.50
Use of Petrol in .000 Tons	94.9	95.2	99.5	109.7	127.9	115.7

Average increase of Fuel Prices

From 1974 to 1980 ... 200%

From 1975 to 1980 ... 182%

Source - Traffic and Transport Demand Estimate - Colombo Central - U.D.A. 1980 - P.23.

6.5.7. The deterrent affect placed on motor spare part business by the reduction in petrol consumption could be levelled off by the increased in diesel consumption. Having considered these negetive and positive facts the growth of future import of vehicles could be estimated in line with usual growth rate of 8%. There was no study conducted to reveal the proportional growth that is likely to take place in motor spare part business activities in relation to the growth rate of number of vehicles. Therefore the growth rate that is likely to be achieved by motor spare part business in relation to the increasing number of vehicles has to be assumed on some realistic arguments.

6.5.8. It is much realistic to assume that the motor spare part business activities could be increasing at a higher rate than that of total number of vehicles. Further there is no realistic ground to assume that it can be growing at a lower rate than the rate of increasing number of vehicles. Therefore it is much reasonable to assume that the motor spare part business could be increasing over the next 10 years time and in the analysis this figure could be assumed to be 20% at which the motor spare part business could be growing.

6.5.9. On the ground portraid in the above analysis the total requirement of floor space for motor spare part business activities could be approximately estimated as follows in keeping with the line of future requirements:

Existing floor area under motor spare part business activities in the study area	183,000 Sq.ft.
Existing floor area under Motor s pare part business activities in the vicinity...	267,000 Sq.ft.
Existing total floor area under Motor spare part business	450,000 Sq.ft.

Additional floor space required
by motor spare part business ... ... 68,000 Sq.ft.

6.6. Under utilization of land s

6.6.1. One of the key objective of this study is to avoid the under utilization of valuable urban lands through an urban renewal programme. In keeping with this aim, the under utilized lands in the study area was identified during the process of study. Most valuable lands occupied by motor spare part business and possessing prominent status in terms of locational consideration in the study area are largely under utilized.

Some dilapidated building structures are appearing on prominent sites and very often they are having only ground floors. These structures have been mostly occjpied by monthly tenants very often paying lower monthly rentals than that of market to the land lords. Though there is a heavy demand for motor spare part business, development of this business through the market forces has long been inhibited by following factors:

(i) Monthly tenants processing a right to occupy the building as it has been derived through a long duration of occupation in the building. Because of this legal rights land lord has least power in forcing the monthly tenants to increase the rental in accordance with the increasing rental in the market. Therefore land lord is very often discouraged to undertake the redevelopment of their properties.

(ii) Some commercially valuable lands are being owned by co-owners frequently leading to ownership problems that inhibits the renewal activities.

6.6.2. These two facts have proven the incapability of market forces to solving the unclear land title problem and tenant-land lord dispute. In such situation the Government has to interfere with such problems by using sole power of compulsory purchase of land.
The same way has to be followed in solving of commercial property renewal problems in Panchikawatte area otherwise it would never be solved by the market forces.

6.6.3. The additional floor space could be made available in the market through undertaken high intensity commercial lands being occupied by dilapidated structures. This development has to be governed by the Planning and Building regulations which are very recently evolved by the Urban Development Authority. With subject to such regulations the total requirement of land area to provide 68,000 Sq.ft. of floor space as the plot ratio set at 2.5 will be 100 perches approximately.

6.7. Provision of commercial Floor Area

6.7.1. So far discussion was focussed towards to analysing problems and prospects of developing the motor spare part business in the study area and the attempt was made quantify the floor space necessary to meet its requirement business activities. And also inertia of market forces in moving ahead the development activities of motor spare part business was analysed and it was found that the inteference by the Government Planning Agencies to solving the property development bottle necks such as dispute between co-owners of lands and tenants and land lords. Therefore it can be concluded the commercial development has to be induced by the Planning Agencies through resolving the dispute among tenants and owners with giving necessary guide line integrating the Panchikawatta Renewal Project with the other urban Development Projects that are underway in the city of Colombo.

6.7.2. Provision of Commercial floor area only for the motor spare part business is not justifiable unless the necessary attention is not given to the other commercial activities such as hotels and groceries. Therefore this part would be discussing the problems and prospects of developing the other commercial activities with making an attempt to examine the level of demand for such development within the area of study. In this regard the growth of population, level of income, employment generation , floor area of other uses and the level of development in the vicinity will be selected as indicators in analysing the demand for other commercial activities.

6.7.3. Level of population growth is an indication of level of growth of needs of ~~xxx~~ people in a locality. This needs are very often being satisfied by the commercial development in commercially developed centres. Any commercial centre servives its commercial activities with the demand of population in the catchment area. On this more realistic assumption the catchment area of Panchikawatte triangle was demarcated considering level of gravitation of Pettah and Maradana markets and which covers Kaligawatte population and the population of the study area itself.

The following table reveals the 1971 population and its future growth:

Table 45 - Population growth of the catchment area

	1971	Growth Rate %	1980	1990
Study Area (Panchikawatte)	10231	.43	10583	11014
Catchment Area	11800	1.5	13500	15700
Total population in the entire area			24033	26714

Source - Estimated on the basis of population data.

6.7.4. Above table discloses todays level of population would be increased by 11% in ten years time. This growth of pouplation will provide the basis to approximating the level of people needs in the same period of time and the present levels of commercial activities would not definitely be adequate to satisfy such needs in 10 years ahead. Therefore increasing demand for commercial activities in the study area can be anticipated.

6.7.5. Income levels of people was summarised and suggested in the table 24 in a previous chapter. As it reveals approximately 67% of the total number of households earning less than Rs. 400 per month while about 33% earning more than Rs. 400 per month.

Expenditure pattern of the people was not observed during the survey was been conducted and therefore the expenditure pattern of the low income group in the Municipal Council area is being level of commercial activities and their level of turnover.

6.7.6. In 1977 a Family Budget Survey was conducted by the Ministry of Plan Implementation with the collaboration of the Department of Census and Statistics. This survey reveals larger propotion of low income groups monthly income, about 70% was spend on food items. If the same propotion is employed in analysing the expenditure pattern of people in Panchikawatta area would reveals that they could generate a heavy demand on grocery type of commercial activities.

6.7.7. Rate of increase in monthly income was also not examine by the survey. Therefore income demand elasticity for commercial activities cannot be analysed. In absence of information regarding rate of increase of income, frequently planners and Economist tend to employ the National Economic Growth rate in analysing the rate of increase of house hold income. This practice cannot be accepted as much realistic rate. But it is much helpful in absence of any figure. On the basis of National Economic Growth rate it canbe assumed that the income level of people would be increasing at a 6% annually. Therefore future demand devived through increasing income at such a rate would justify an undertaking a commercial development including groceries and other commercial activities in the area of study.

6.8. EMPLOYMENT GENERATION

6.8.1. Level of employment could be increased at a higher rate with the commencement of implementation of this urban renewal project through the increased activities of construction work and the increased activities of Motor spare part business. The Motor spare part business it self could generate approximately 900 employment apportunities. (This figure was extimated on the basis of ratio forkulated by Urban Development Authority in 1980. It was 80-100 sq.ft. per employee). During the near future that has tobe supported by other service activities like hotels, snack bars, eating houses, entertainment facilities etc. This inturn would increase the level of employment in service activities generating a higher demand on commercial development. Therefore commercial development should he necessary element in the urban renewal programme of this area.

6.9. DEVELOPMENT OF OTHER COMMERICIAL ACTIVITIES

6.9.1. As far as the laocation of Panchikawatta triangle is concern it is much clear this area is encircled by a number of commercial centres prevailing at various levels of development like Pettah, Maradana, Dematagoda etc. As far as the commercial development in Panchikawatta area is concerned it would prevail at a lower level than the other highly development market centres like Pettah and Maradhana. Therefore gravity force of the market centres could attract more people in to developed market centres. But low income groups are frequently served with food items and other good by informal sector as it is much cheeper for them.

The distance factor from residential areas to the market centre very often act as a deterrent affect in attracting people to the marked. In that sence Maradhana and Pettah markets are located at a considerable distance than the study area.

6.9.2. The next fact is at the movement food items and other home needs are not available in the study area, and therefore it makes the people to be gracitated by other developed commercial centres though they are located at a distance. Once such facilities are opened up more prople could be gracitated in to the new commercial centres of this area.

6.9.3. With the opening of a new road through the Maligawatta housing scheme has provided more accessibility to the Panchikawatta area which was wither to kept isolated from the Maligawatta housing scheme. Since the accessibility was increased from the Maligawatta housing scheme to the Panchikawatta area it is much convenient to the people living in the housing scheme to reach Panchikawatta area with in a short time.

In addition to that the lockgate housing development scheme will create a positive force to encourage the commercial development in the area under consideration.

6.9.4. The discussion up to now has revealed that there is a demand for commercial development as well. But it could not be a centre similar to Pettah, Maradhana or Borella Market centres. Analysis of the income levels of people expenditure pattern level of development of commercial centres in the vicinity and the level of employment have justified the commercial development in the Panchikawatte area should be a local one in nature, because high level of development in commercial activities would not be feasible as other developed commercial centres compete against this development.

Therefore it canbe concluded a commercial development is necessary to satisfy the local needs.

6.10. PROVISION OF HEALTH FACILITIES

6.10.1. As far as the social infrastructure facilities are concerned it is much revealing fact that the health facilities are not satisfying the people's needs. This inadequancy has been refelcted in numerous ways and which will be discussed in this part by using indicators such as infantmortality rate, occupants needs availability of family health facilities and delivers of babies at maternity homes.

Since the majority of the households approximately 60% are earning less than Rs. 400/- per month the health facilities should be available for them free of charge. Thus the private hospitals available within the study area is no use for the low income groups.

6.10.2. It is a normal argument saying that the Colombo District is having more facilitated and equiped hospitals with specialist service within the reach for every body in the Colombo Municipal Council area. In this argument Panchikawatta area cannot be an exceptional case since it is being located within the Colombo City limits at a distance of about one mile away from the General Hospitial of Colombo. Further more one can argue that this area is having a Health Centre maintained by the Colombo Municipal Council, rendering services to the people free of charge .

TABLE 46 - Infant Deaths and Infant Death Rates by wards

Ward	Estimated Population	No. of Infant Deaths
Fort	17115	2
Cinnamon Garden	16936	2
Kollupitiya	13236	4
Bambalapitiya	13370	7
Wellawatta - South	11453	6
Panchikawatta	11347	11
Maligawatta - West	9422	12
Aluthkade - East	14722	14
Aluthkade - West	9444	12
Masangasweediya	11227	8

Source : Annual Report - Cheif Medical - Officer of Health - Colombo Municipal Council - 1979

6.10.3. The realistic picture of the available health facilities in the Panchikawatta area is partly revealed by the above table. The number of infant deaths in Panchikawatta area amounted up to 11 in 1978 and it occupies the third place among the wards with higher number of infant deaths.

Further more the following tables reveal the possible couses of infant deaths.

TABLE 47 - No. of Polio Immunization given

Health Centre	1st Dose	2nd Dose	3rd Dose
Panchikawatta	490	304	120
Total	6860	5457	4346

Source : Annual Report - Cheief Medical Officer of Health - Colombo Municipal Council - 1979

TABLE 48 - No of Triple Vaccine Given

Health Centre	1st Dose	2nd Dose	3rd Dose

TABLE 48 - No. of Triple Vaccine Given

Health Centre	1st Dose	2nd Dose	3rd Dose
Panchikawatta	630	573	203
Total	5643	4335	3185

Source : Annual Report - Chief Medical officer of Health - Colombo Municipal Council - 1979

6.10.4. Above two tables reveal that the number of cases obtaining vaccine and Polio immunization in second and third is decreasing. In this regard the Chief Medical Officer of Health of the Colombo Municipal Council explains that it is not effective the gaining of vaccine and Polio immunization unless the 3rd dose is not given. According to the C.M.O.H. it is carelessness of the people and their poor knowledge in health education. Poor knowledge in health education is not due to the carelessness of the people but due to the lack of programmes to educate the people at local level, in fact could be largely constrained by the lack of well equiped health centre at such areas. This argument is quite true in Panchikawatta area, due to the fact that even the available Municipal Health Centre does not have adequate accomodation to providing maternity facilities. Following table reflects the truth of this picture.

TABLE - 49 Delivers at Maternity Homes

	1977			1978		
	Maternity Home	District Midwife	Total	Maternity Home	District Midwife	Total
Colombo City	2990	697	3687	2702	664	3366
Panchika-watta Health Centre	nil	51	51	nil	26	26

Source - Annual Report - Chief Medical Officer of Health - Colombo Municipal Council - 1979

6.10.5. The above table has proven the totaly inadequancy of the present health centre. As it reveals the total number of deliveries in the Panchikawatta area took place in the houses themseleves. This is quite possible to cause the high number of infant death ratos in this area as well. The health centre available in Panchikawatte area is not equiped at all to render such facilities. These inadequancies of the present health centre which is maintained by the Colombo Municipal Council have been causing the people of this area to suffer for longer period of time. The degree of suffering of the people is partly reflected in the occupants priority needs suggested in the part 4:16. As it reveals approximately 22% of the house-hold needs health improvements in this area.

6.10.6 The discussion developed up to now has revealed that the health centre and its facilities are totaly i inadequate and which have expand the area for health hazard. Therefore in the light of above discussion it can be concluded that the health centre has to be up graded in order to develop health facilities.

6.11. IMPROVEMENTS OF EDUCATION LEVELS

6.11.1. One can argue that the educational level facilities available in a locality. But this argument does not represent the real situation in localities where low income groups are living. In this regard Panchikawatta area suggests as good example revealing that the school drop out rate is much higher compare to other areas in Colombo. This fact has been proven in a previous part and been confirmed by the table 31 and 32.

6.11.2. Therefore more improvement in education facilities itself does not contribute any way to improving the education level unless the income level of the people is improved adequately. Therefore the apparent conclussion that that canbe drawn here as that the improvement in education facilities has to be postponed as such facilities are available and the improvement in income level has to be accelerated.

6.12. THE NEED OF LANDS FOR VARIOUS USES

6.12.1. The entire analysis upto now on the problems and the conclusion reached at are revealing that the need of lands for various uses are considerable. There requirements for land by numerous uses have tobe taken into consideration in doing the ultimate task of zoining the area. Therefore before step in to the stage of zoining the need of lands for various uses has to be summerised in the light above analysis.

Following table represent the summery of land requirements estimated on the basis of above analysis.

TABLE - 50 Estimated land area for Zoning

Description	A	R	P
HOUSING			
For New Residential uses	17	0	6
For Upgrading schemes	4	0	21
For Existing Good/Fair Housing units (Scattered elsewhere)	3	2	28
COMMERCIAL			
For Motor spare part shops (Existing uses tobe upgradad)		2	20
For other Commercial Activities	1	2	20
For Existing Commercial activities (tobe continued)	4	0	20
HEALTH			
For Improvement of Health facilities		1	20
ENVIRONMENTAL UPGRADING AND INFRASTRUCTURE IMPROVEMENTS			
For open spaces	1	0	0

Description	A	R	P
ENVIRONMENTAL UPGRADING AND INFRASTRUCTURE IMPROVEMENTS			
For schools , Cinema etc.	1	3	10
For Major / Minor Access Roads and other uses		3	20
TOTAL	35	1	5

7 Zoning & Layout Plans

7.1 In the above analysis attempt was made to gauge the magnitude of the problems and to assess the planning requirements in order to solve the problems of the study area. In the light of this analysis land requirements were estimated with the objective of laying foundation for evolving a zoning scheme and preparing a detail layout plan for the future use of land. Before step in to the zoning and preparation of layout plan the other plans evolved by different planning agencies have to be evaluated in the light of the above analysis.

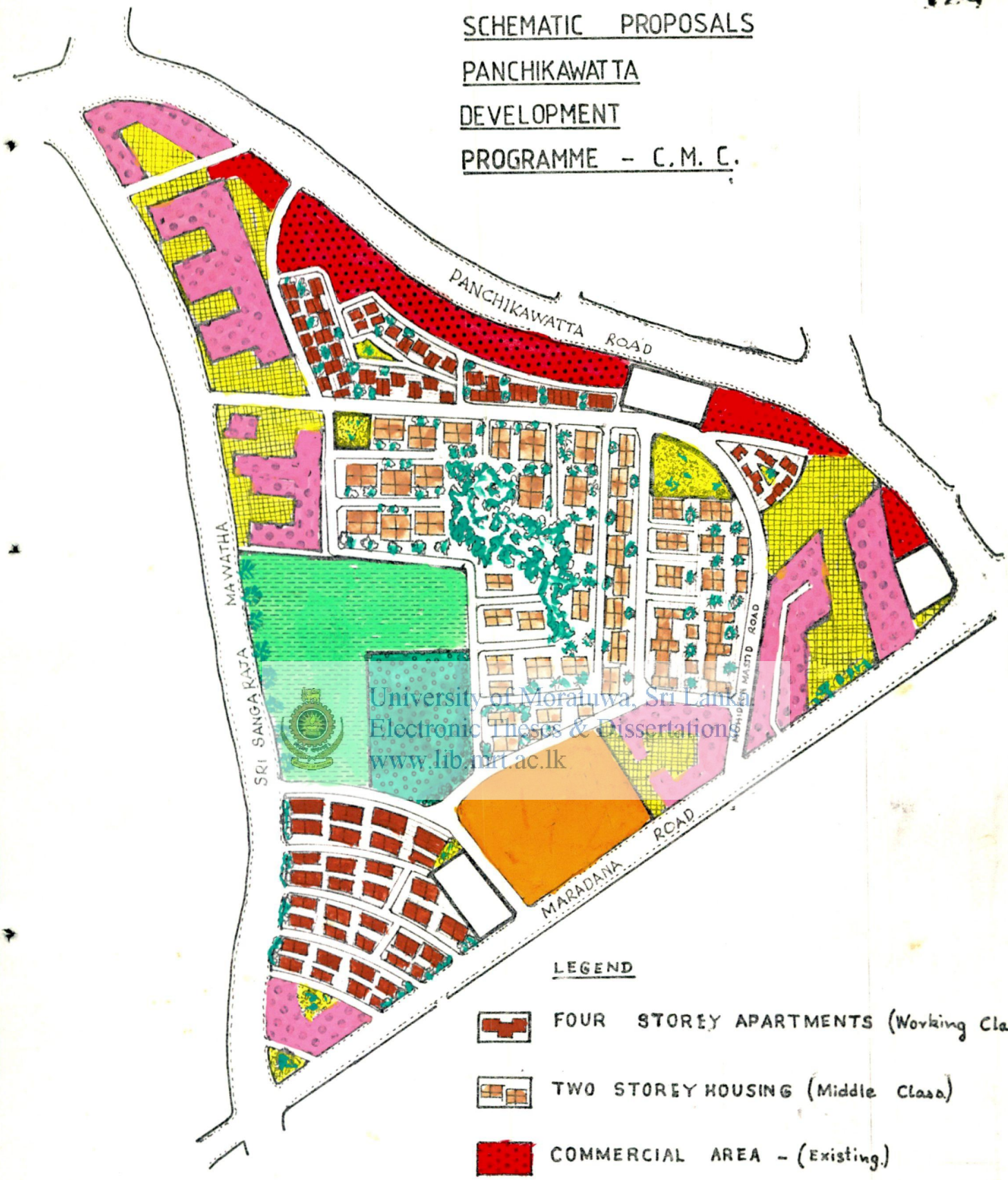
In this regard two plans have been prepared by Colombo Municipal Council and Urban Development Authority base in the same study that has provided informations for this study as well.

7.1.[illegible] In the following discussion would examine these two plans to evaluate the extent to which their proposals would address the problems that have been identified in this study.

The first attempt towards preparing a map for Panchikawatta area was made by the Colombo Municipal Council in 197[illegible]. The zoning map prepared by the C.M.C. is shown in map No: [illegible]. The proposals set in the plan seem to be covering all aspects of urban renewal like commercial, residential, health services, environmental upgrading etc.

Since the major problem has been residential as high lighted almost through out the study little attention seems to be focussed on housing by the Colombo Municipal Council in preparation of this Schematic Proposals for Panchikawatta area. The major problem connected with decaying housing situation in the study area was found to be low level of affordability among household for housing. Therefore as analysed in the above discussion upgrading concept could have been included in the planning proposals set in their plan. Instead of that

SCHEMATIC PROPOSALS
PANCHIKAWATTA
DEVELOPMENT
PROGRAMME - C.M.C.



LEGEND

- FOUR STOREY APARTMENTS (Working Class.)
- TWO STOREY HOUSING (Middle Class.)
- COMMERCIAL AREA - (Existing.)
- COMMERCIAL AREA (Proposed.)
- SCHOOL
- PLAY GROUND
- PARKING
- HEALTH

PANCHIKAWATTA AREA
Scale: 4 chains to one inch

MAP NO. 20

the plan carries two type of residential proposals as follows:

A. Four Storey Apartment (working class)
B. Two storey Housing (Middle class)

Approximately 6 acres and 6.5 acres have been earmarked for the above residential development respectively. In the first place adequacy of this land area has to be evaluated in relation to the increasing population, households and existing housing backlog. According to the estimates made in this study depending on the density standards set by the Urban Development Authority and on the standard living space per person prescribed by the Public Health Act of the England and Wales (see appendix 2) has revealed that the land area required, if it is to keep the pace with increasing number of households over 10 yrs. period of time is approximately 18 acres. Therefore the residential development proposals cannot be accepted as rational solution for the acute housing problem of the study area.

7.1.2 Secondly the possibility of upgrading some decaying housing units was not accessed in the C.M.C. Development Proposals (1) and a Bulldozer type development to built middle income housing units was proposed irrationally. As far as income level of the People are concern approximately 70% of the total number of households are falling under low income category. Therefore underlined concept of middle class housing development could be identified as bein omission of poor income housing groups who have been plagued by the acute housing problem.

7.1.3 Land area for commercial development approximately 10 acres has been earmarked (2) without giving any consideration to the degree of demand for such development. In the present study extensive and analytical consideration was given to making an evaluation in order to gauge the

(1) Panchikawatta Development Programme- Unpublished Draft Report- Colombo Municipal Council - 1979/80

(2) Panchikawatta Development Programme- Unpublished Draft Report- Colombo Municipal Council - 1979/80

magnitude of the demand. On that basis over the next 10 yrd. period of time about 6 acres of land was estimated to be commercially developed. Therefore demand for commercial development seems to be over estimated by the Colombo Municipal Council Development Programme giving a large extent of land for commercial development which could have been put into residential development. The major weakness of this plan is of non availability of planning guide line such as density control standard living space per person etc. which should necessarily be incorporated in development plan.

The location of activities was not given due consideration inrelation to the technical feasibility of providing infrastructure facilities such as water, sewerage etc. The land earmarked for residential development is far away from the existing water and sewer mains (1) which has increased the cost of provision of such facilities.

The proposals are included in the plan covering improvements of health facilities expansion of education facilities and improvements of accessibility and environmental quality which could be highly appreciated since they represent the key interest of the Municipal Council in improving the social well being.

7.1.4. The advantages and the disadvantages of the C.M.C. development proposals suggested in the above, facilitate the drawing conclusion that although the information gathered through a field survey they were not properly analysed in order to identify the major problems in the study area. The lack of analitical aspect in this study made the plan unrealistic and irrational in relation to the ever growing problems. Only the

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(1) See Maps - No: 4 and 5.

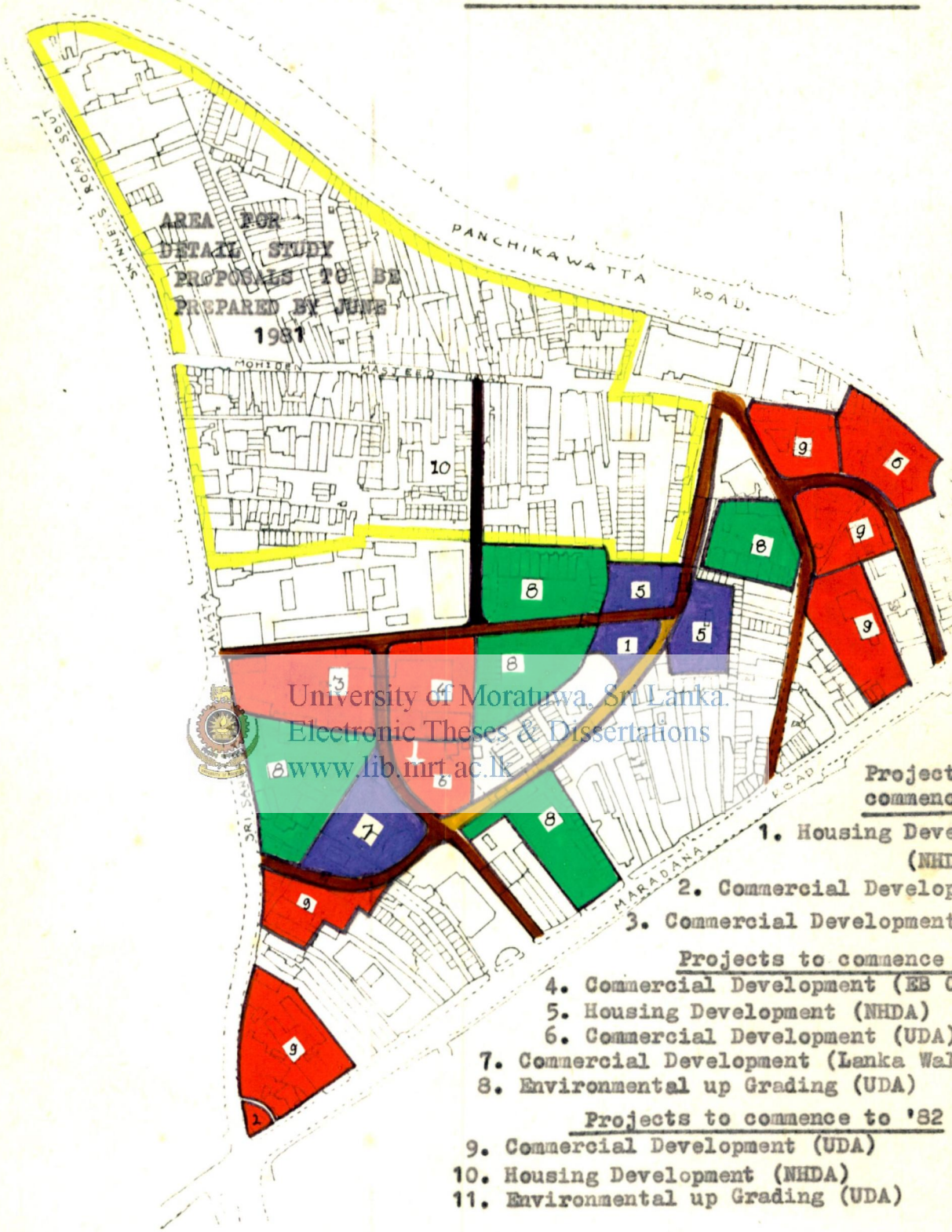
social development accept could be appreciated but it is too holding a weakness of non availability of integration with the other development proposals. Therefore it can be concluded that the Colombo Municipal development plan has to be modified to be able to address the major problems in the study area. Since the Urban Development Authority came into being the task of preparing a plan for Panchikawatta area was taken over by the U.D.A. which was upto then evolve by the C.M.C.

Since the preparing a plan for Panchikawatta area has became the responsibility of U.D.A. the first plan prepared by the Colombo Municipal Council was subject to series of modifications by the U.D.A. and a further detail study was undertaken in order to being further changes in to the plan (see map No: 21).

7.15 A considerably large area is yet to be studies by the U.D.A. for the completion of their plan. Therefore it is too early to draw a conclusion regarding the U.D.A. Development Plan but it is suffice to say that it seems to be giving higher weightage for commercial development. This biasing of the plan towards commercial development alone is reflected in the fact that it has not given due consideration to the improvement of health facilities, environmental quality and promotion of social standards of the people.

But the sole advantage that can be extracted from the U.D.A integrated development plan is the consideration being given to upgrading some number of housing units. Since the upgrading concept is technically and economically feasible in the content of present Urban development. The U.D.A. proposal to upgrade certain number of decaying housing structures has to be appreciated.

PANCHIKAWATTA INTEGRATED DEVELOPMENT PROJECT
URBAN DEVELOPMENT AUTHORITY



SCHEDULE

Projects to commence in 198

1. Housing Development (NHDA)
2. Commercial Development (UD
3. Commercial Development (EB Cre

Projects to commence in 1981

4. Commercial Development (EB Creasy)
5. Housing Development (NHDA)
6. Commercial Development (UDA)
7. Commercial Development (Lanka Walltiles)
8. Environmental up Grading (UDA)

Projects to commence to '82

9. Commercial Development (UDA)
10. Housing Development (NHDA)
11. Environmental up Grading (UDA)

PANCHIKAWATTA AREA
scale 4 chains to one inch

MAP NO. 21

ROAD PROPOSALS

Short term implementation
Middle term implementation
Long term implementation

7.16 The common weakness of these, C.M.C and U.D.A. Panchikawatta development plans is that they have not analysed the cost and the benefits of the project. Therefore feasibility of these two projects is not been able to study and thus the planning capabilities in the urban administrative setup could not be assessed.

7.1.7 Considering the above mentioned weaknesses and the successes of two plans prepared by Colombo Municipal Council and Urban Development Authority now it is time to evolve a zoning scheme and a layout to the study area. In the light of above analysis therefore the next step has to be taken in order to evolve a zoning map and a layout plan for the study area.

Next step after the preparation of layout and perspectives a cost benefit analysis will be undertaken in order to study the viability of this project in terms of both social and commercial considerations.

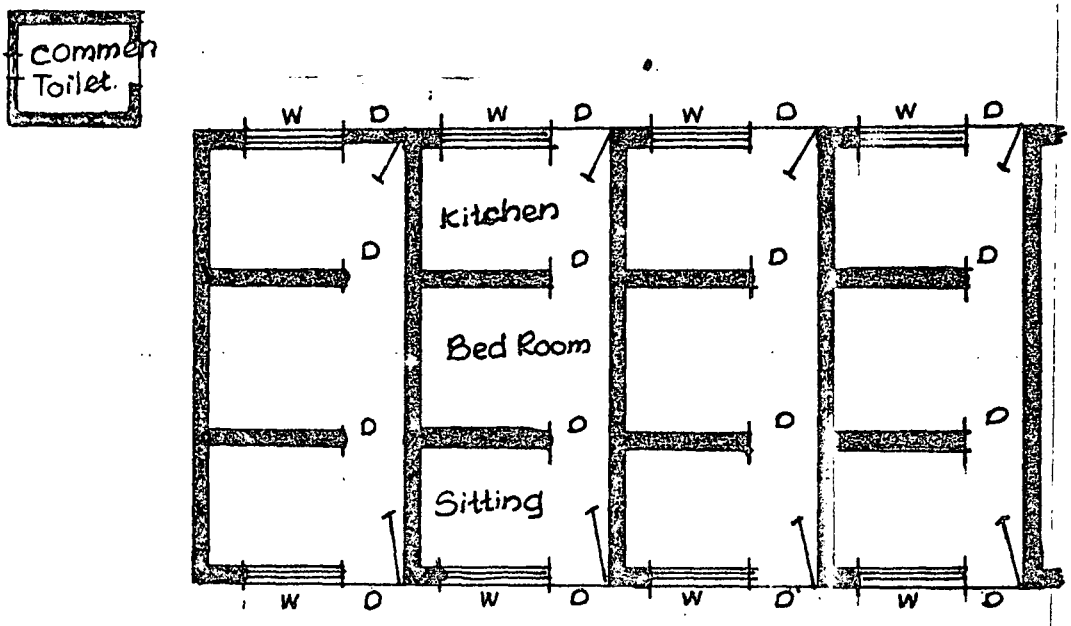
ZONING MAP

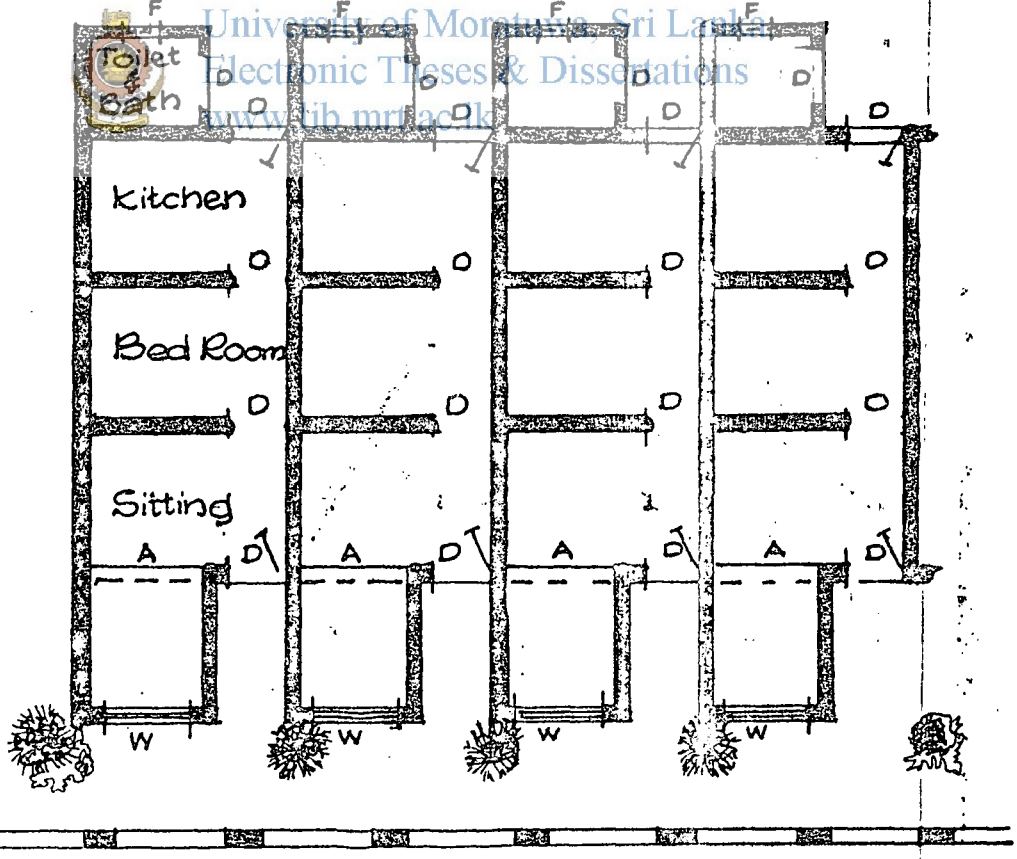
PANCHIKAWATTA

RENEWAL PROGRAMME

map no. 22

Existing Situation of the improveble houses -

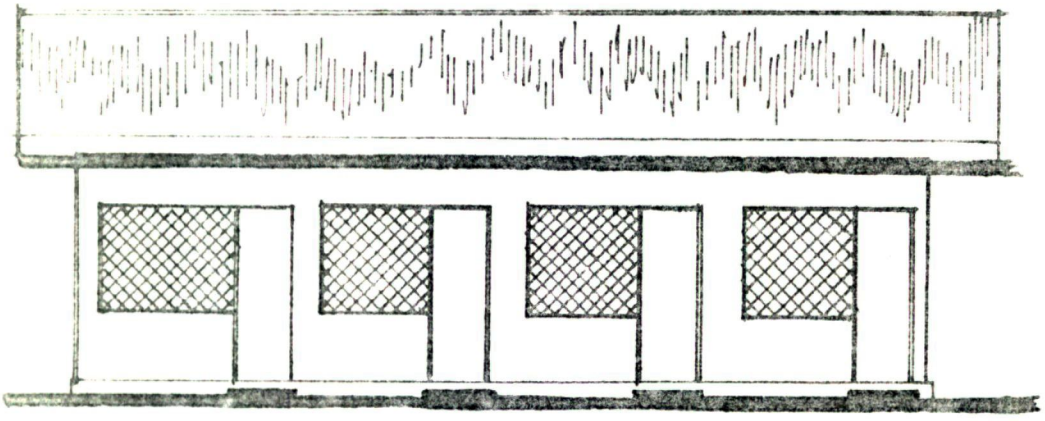




MAP NO. 23

After the upgrading

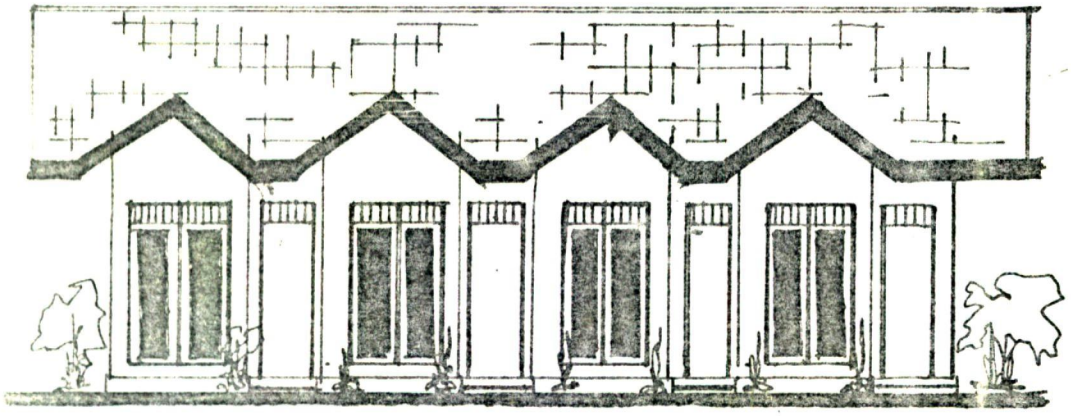
EXISTING SITUATION OF THE IMPROVEBLE HOUSES



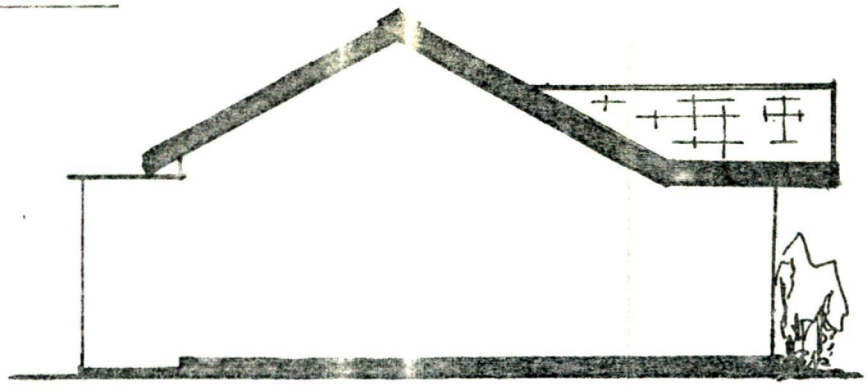
Front Elevation

Side Elevation

AFTER THE UPGRADING

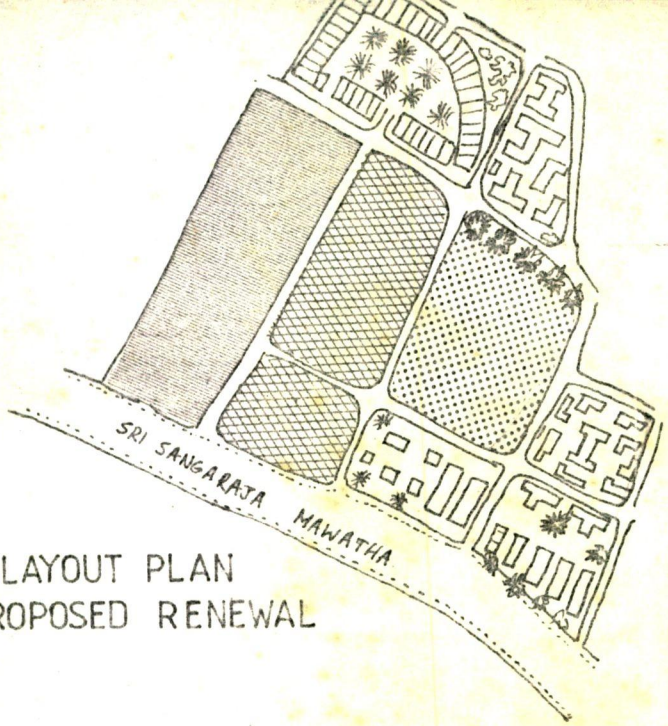


Front Elevation

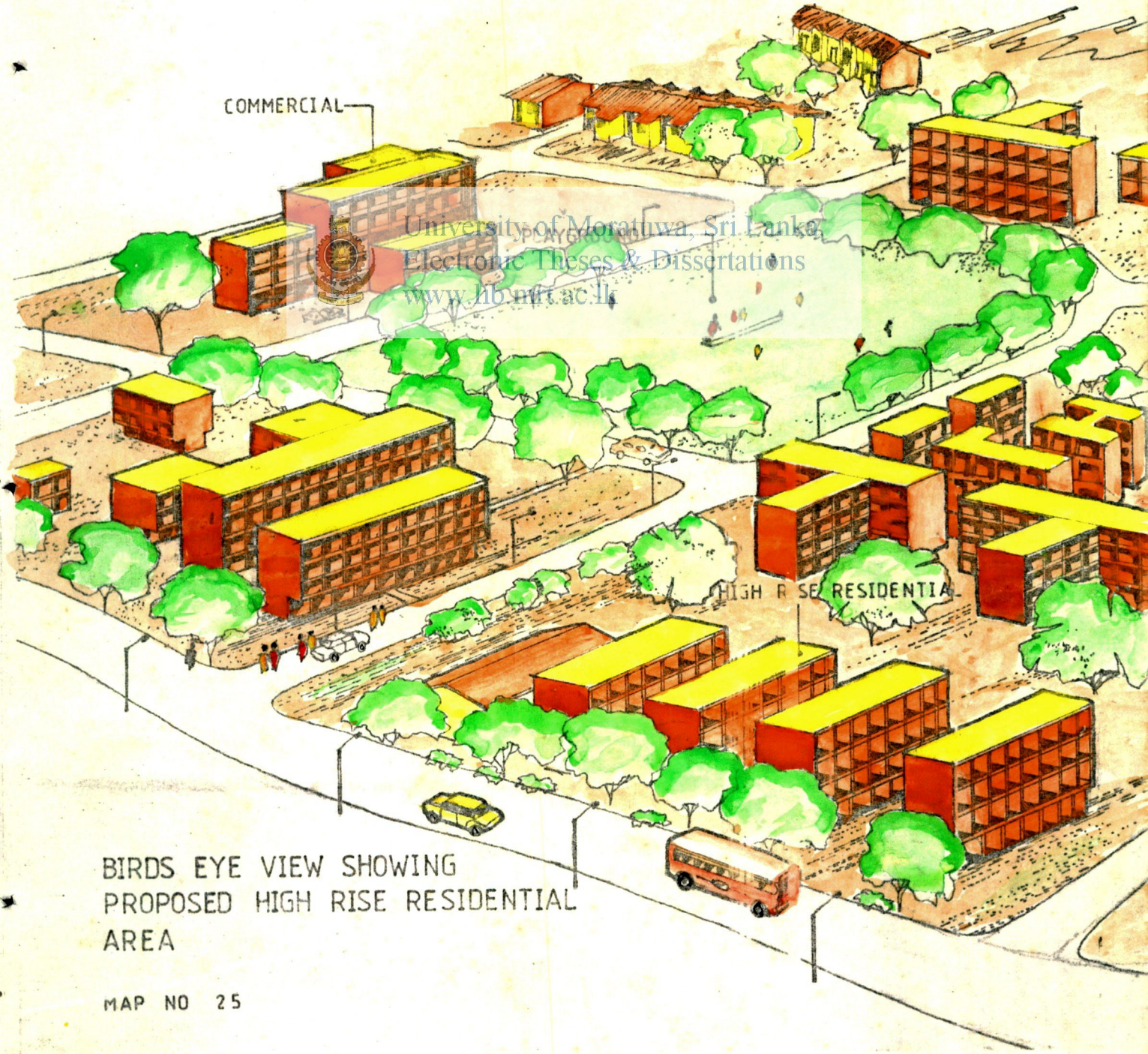


Side Elevation

MAP NO. 24



PART LAYOUT PLAN
OF PROPOSED RENEWAL



BIRDS EYE VIEW SHOWING
PROPOSED HIGH RISE RESIDENTIAL
AREA

MAP NO 25

7.2 ANALYSIS OF COST AND BENEFITS OF THE PROPOSAL PROJECT

7.2.1 Project Parameters

These parameters were evolve in the stage of projecting future requirements of land, floor space, residential units, infrastructure facilities etc.

i. RESIDENTIAL

Residential Units to be upgraded	-	500
Residential Units to be constructed with high density	-	2000

ii. COMMERCIAL

Floor space for Motor spare parts shops	-	70,000 Sq.ft.
Floor space for other commercial activities	-	250,000 Sq.ft

iii. INFRASTRUCTURE FACILITIES

SOCIAL:

Improvement of Health facilities	-	10,000 Sq.ft
Provision of an open space	-	1 acre

PHYSICAL:

Provision of major/minor access roads - (30 ft. wide)	-	1.5 Mile
Development of land scape and other facilities		

7.2.2. DERIVATE OF UNIT COSTS

Different professionals were consulted in working out the unit costs.(1)

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(1) Somapala de Silva - Sup. Engineer - City Planning - C.M.C. Colombo.

Ananda Sumanadasa - Traffic Engineer U.D.A.

ESTIMATES OF CONSTRUCTION COST

RESIDENTIAL

i.	Cost of upgrading for 500 housing Units at the rate of Rs. 18,000 per unit	- Rs.	9. m.
ii.	Cost of construction of 2000 high density housing units at the rate of Rs. 100,000 per unit	- Rs.	200 m.

COMMERCIAL

iii.	Construction cost of Motor Spare parts shops at the rate of Rs. 350/- per sq.ft	- Rs.	23 m.
iv.	Construction cost for other commercial activities at the rate of Rs. 300 per sq.ft	- Rs.	75 m.

INFRASTRUCTURE (Social and Physical)

v.	Improvements of Health Centre	- Rs.	1.5 m.
vi.	Provision of other infrastructural facilities (Eg. Roads, Open Space, etc.)	- Rs.	4.5 m.

COST OF LANDS (1)

vii.	Cost of land acquisition at the rate of Rs. 50,000 per perch for 6 acres (for residential)	- Rs.	48 m.
viii.	Cost of land acquisition at the rate of Rs. 30,000 per perch for 100 perches (for commercial)	- Rs.	3 m.

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(1) Since a large extent of residential lands is being owned by Government Agencies (i.e. National Housing Development Authority) except 6 acres which are demarkated for residential development is available for the removal Project without any compensation payment.

22.3 Projection of Future Income

RESIDENTIAL

i. Rental income from houses which are to be upgraded(1) ... ...Rs. 576,000 p.a.

ii. Rental income from high density housing development (2) ... ...Rs.2304,000 p.a.

---

(1) Expenditure pattern of house holds was observed by the Department of Census and Statistics and the Ministry of Plan Implementation through a survey held on family Budget Survey in 1977 and which had disclosed the most low income groups can afford about 24% of their monthly income.

The same proposion was applied here in calculating affordability of households for housing assuming Rs. 400 per month (see table24) as average income of households living in upgradable housing units.

(2) Although the type of residential development is different from the upgrading scheme the households to be housed in them are possessing the similar characteristics in the sense of earning capability expenditure pattern and affordability for housing.

Therefore same assumption which had provided the base for upgraded houses employed here as well.

COMMERCIAL

Estimates of rental income from commercial development.

i. **Motor Spare Part Shops**

Gross floor area to be provided	- 70,000 Sq.ft	
Rentable floor area (80%)	- 56,000 Sq.ft	
Rental income per month at the rate of Rs. 20 per Sq. ft.	- 56,000x20	=Rs. 1,120,000
Annual income		=Rs.13,440,000

Deducts:

Maintenance cost at the rate of Rs. 5/- per sq.ft.	-Rs. 350,000	
Insurance	-Rs. 575,000	
Total Annual Cost	-Rs. 4075,000	
Annual net income		=Rs.13,032,500

ii. **Other Commercial Developments**

Gross floor area to be provided	-250,000 sq.ft	
Rentable floor area (80%)	-200,000 sq.ft	
Rental income per moth at the rate of Rs. 15 per sq.ft.	-200,000x15	=Rs. 3,000,000
Annual Income		=Rs.36,000,000

DEDUCTS

Maintenance cost at the rate of Rs. 5/- per sq.ft.	-Rs.1,000,000	
Insurance	-Rs. 563,000	
Total annual cost	-Rs.1,563,000	
Annual net income		=Rs.34,437,000
Total annual net income		=Rs.47,469,500
Projected annual net income (Residential, commercial and other Developments)		= Rs.50,349,500

7.2.4 The total project cost as estimated above would amount upto Rs. 366 m. and the total Project income was estimated to be Rs. 50,349,500 p.a. This estimates reveal that the pay back period of the investment will be 18.5 yrs. This calculation was done at the interest rate of 13% because the marginal productivity of the national capital (Social rate of discount) falling with in the region of 13.3% as the Ministry of Plan Implementation analysed.

7.3 Social Benefits

7.3.1 Apart from the direct benefits as was quantified in the above analitical study the social benefits have to be taken into account which could be derived out of a Urban renewal project like this. Therefore it is significant to make the attempt in order to identify the social benefits. Quantification of social benefits has proved the fact that quantification of them by a common unit is impossible and also it is true that the making attempts to quantify the social benefits is beyond the scope of this study. Therefore, if is sufficient to critically evaluate social benefits that would meet our initial objectives set in a previous stage of the study.

7.3.2 Provision of housing units itself for the backlog and for the households living in a decaying housing units is a great social benefit. As far as housing problem concern, as was highlighted in previous chapters, 500 housing units have to be upgraded immediately due to the grave physical condition.

In addition to this 687 households living in decaying housing structures that are unimprovable anyway could be housed in high density new housing units. The renewal programme has considered the future requirements also.

The social value of this benefits would be highly appreciated when the low income groups obtaining new permanent housing structures with a decent environment without getting any burden in affording monthly rental since the high rental values are cross subsidised by the commercial development.

7.3.3 Provision of room for the improvement of Health Centre being maintained by Colombo Municipal Council would be able to render advanced service including Health Education and Family Health Services which are lacking at the movement in the area of study. This benefits could result in reduced infant death rates and increased the other health standards.

7.3.4 Previous chapters of this study have proved that the unemployment and underemployment problem in the study area has been an acute problem and which has resulted in unstable household income causing other severe problems. Such as poor affordability for housing, malnutrition illiterate level etc.

This urban renewal project itself is possessing the greater potential of creating employment opportunities through increasing the floor area for commercial activities, both motor spare part business and other commercial activities, and through the construction activities likely to take place since the renewal project start to be implemented.(1)

The generation of employment opportunities will in turn promote the income level among the poor house hold and which could reshape the life style considerably. These results could be highly appreciated in terms of socio-logical considerations unfortunately which can not be quantified by accepted economic standards.

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(1) Employment opportunities were estimated depending on the basic of 60 Sq.ft. per employee. This criterian was evolved by Jeffrey Heng in the report submitted on Development Control Strategy for Central Area Colombo, to the Urban Development Authority-1980.

7.3.5 The Urban Renewal Project will grow along with creating better environment including open spaces giving pleasure look to the entire area and which could promote the aesthetic beauty of the area and by which in turn advanced living and health standards among residents could be resulted. This effects could partly be reflected in economic terms such as increased land values and rental values in the study area as well as the surrounding areas.

Since the renewal project is holding the capability of satisfying the requirements of low income groups redistribution of Urban resources could be achieved. It will pave the way to divert more resources from high income groups to low income groups and will result in mitigating the income disparity which is essential within the present urban development context.

Item	Before the renewal Programme	After the renewal Programme
Adequate Housing	A backlog of 366 housing units	2000 new and 500 upgrated housing units
Housing Condition	64% of poor quality housing units	100% of good quality housing units
Floor Space per person	36 Sq.ft. of floor area per person	80 sq.ft. of floor area per person
Water Supply	79% of communal water taps	100% of separate water connections
Sewerage Disposal	37% of communal toilets	100% of separate toilets
Environmental quality	Non availability of open spaces	An open space of one acre to develop the environmental quality
Health facilities	Inadequacy of health facilities	Additional space of 50 perch to improve health facilities
Employment opportunities	56% of the working age in unemployed	Provision of more than 2000 job opportunities
Space for commercial development	Extensive development including obsolated buildings	Intensive development
Public sector tax revenue	Rs. 494,500 p.a.	Rs. 11,362,500 p.a.

8. CONCLUSIONS AND RECOMMENDATIONS

Underline objective of undertaking this study was to evolve and Urban Renewal Methodology which can be applicable in the process of Urban renewal.

In the first part of the study the emphasis was laid on the historical background in which the problem of obsolscence has been evolved. In the height of this analysis acute problems that are connected with the physical obsolescence have been highlighted in a general scope. Among this problem inadequncy of water supply, declining sewerage facilities owing to the reason of decaying sewer lines, non-availability of electricity for low income groups, shortage of housing units, increasing land value etc., were highlighted since they have been more acute in the City of Colombo.

Having analysed the above circumstances discussions was extended to gauge the magnitude of obsolescence in the City of Colombo. In this part magnitude of the obsolescence was identified and it has revealed that approximately 15% of the city's total land area is being covered by obsoleted physical structures without adequate infrastructure facilities. In this analytical discussion more stressed areas needed to be identified in order to perview the particular characteristic of obsolesence and its problems. To make this analysis successful gridmap technique was employed and conclusively Panchikawatta area was selected for the detail study since it carries higher stress weightage.

The next part of this study require a detail study as the Panchikawatte area to identify the severe problems that have plagued this area for more than 25 years. The informations gathered through the study was analysed to high light the severe problems in this particular area. Low income, unemployment, lack of adequate housing units, decaying infrastrucutre facilities, land misuse, etc. were raised as severe problems. The analytical discussion of this part led to draw a conclusion of that the solution required has to be a short term one and therefore Urban renewal is the only solution capable of solving the above problems.

Objectives of Urban renewal were discussed in the next part and various examples had been included in such discussion to grasp the other countries experience in this respect. Ithaca Down Town of U.S.A. and Karachchi of Pakistan were selected as prominent examples in this discussion and their failures were attributed on their bias towards economic or social aspects in particular. Therefore, in order to avoid this failures in the context of Urban renewal programmes a conclusion was drawn to emphasize the rationate of an undertaking a total Urban renewal covering all the aspects of human life. In the light of analysis hitherto developed an Urban renewal process was evolved considering the particular characteristics of Urban renewal problems.

The next immediate fact that has to be studied was to assess the capability of planning agencies in Sri Lanka to carry out such Urban renewal programme in line suggested in the previous part. In this respect prominent planning agencies like Urban Development Authority, National Housing Development Authority, Municipal Council of Colombo, Common Amenties Board, etc., were laid under consideration and they were found to be capable of undertaking such Urban renewal programme.

The final stage was ear marked to design a zooming scheme and a detail layout plan considering the future state of problems that could be growing at the currant rate of obsolescence. A cost benefit analysis was undertaken in order to assess the economic vaibility of project.

The conclusions drawn in each part of the study provide a sufficient ground to make recommendations that are capable of addressing the problems connected with obsolescence.

The major recommendation that can be made here is that the Urban renewal in a specific area should not be an isolated probect since such areas are being componants of a whole Urban set up. Therefore, such Urban renewal project has to be considered as a building block of an overall plan covering the entire Urban system. This implies peace meal solution is not an appropriate solution for Urban obsolescence. Therefore Urban obsolescence

has to be cured by a planned development covering entire Urban set up.

It was profoundly analysed the objective of Urban renewal programme, and finally it was concluded that the Urban renewal programme should be a comprehensive renewal programme covering all the aspects of Urban life. Pu e social development or commerical development or physical development is not holding the capability of solving the prcblem of obsolescence. Social development has been restricted very often by lack of funds and by low level of affordability for such development among low income groups, living in such areas. Therefore pure social development is not economically feasible and hence commercial development also has to be undertaken in such a programme. This paves the way to the modern consept of cross subsidy system that can be adopted in development of social aspect of such area. Therefore, it can be recommended that Urban renewal programme has to be orinted towards a mixed development. Since the high density development is more costly, low densing and upgrading were highly reocmmended for developing countries, but this study has revealed that the low density development and pure upgrading in the heart of the City is impossible due to the shortage of buildable lands and increasing value of lands. On the other hand puee high density development is not capable of solving problems of housing the low incoem groups. Therefore in this methodology a new concept has been evolved suggesting a mixed development. i.e. high density and low density such an appropriate blend of density requires a high density development and upgrading on the spot when it is necessary. High density commercial development is very often capable of generating a higher rate of profit and that can be utilised in subsidising the rental value of high density residential development and of upgrading.

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APPENDIX I

PANCHIKAWATTE RENEWAL PROGRAMME

Socio-Economic Survey

1. Premises Number or other Identity Number:.....

2. Name of Chief Occupants:.....

..... 3. Race:.....

4. No. of Households: .....

5. No. in Family: .....

Age										
Males										
Females										

6. Children up to five years: .....

7. Children attending school: .....

8. If not attending school, why? .....

9. Average distance to school: .....

10. Mode of travel: .....

11. Employment: .....

	Permanent	Temporary	Casual	Self-employed
Males				
Females				

12. Total unemployed: .....Males:.....Females:.....

13. Educational Levels of unemployed :

Males	Females
.....	.....
.....	.....
.....	

14. Distance of travel to work

.....

.....

.....

.....

15. Mode of travel

.....

.....

.....

.....

16. The Building: Type of Building .....

Condition of Structure .....

17. Age of building: .....

18. Existing space:

.....

19. Services:

Water Supply - Separate/Communal

Toilet facilities - Separate/Communal

Lighting - Electric/Kerosene

20. Occupancy:

21. Period of Residence .....

22. Rent: Rs.....

23. Total Household Monthly Income Rs. .....

24. Occupant's needs & priorities: .....

.....

.....

.....

25. Observations andsuggestions by interviewer:

.....

.....

.....

Appendix - 2

Table 1

Where a house consists of -	The permitted number of persons is -
(a) One room	2
(b) Two rooms	3
(c) Three rooms ...	5
(d) Four rooms ...	$7\frac{1}{2}$
(e) Five rooms or more	10 with an additional 2 in respect of each room in excess of five

(In using this Table, a room of less than 50 square feet is not counted as a room).

Table 2

Where a room in a house has a floor area of -

(a)	110 sq.ft. or more	2
(b)	90 sq.ft. or more, but less than 110	$1\frac{1}{2}$
(c)	70 sq.ft. or more, but less than 90	1
(d)	50 sq.ft. or more, but less than 70	$\frac{1}{2}$
(e)	Under 50 sq.ft.	Nil

Source

The Public Health Acts - England & Wales - Memorandum B - The Prevention and Abatement of Overcrowding - Vol - VI - Page 937