



# TRINCOMALEE

AN INTEGRATED DEVELOPMENT PERSPECTIVE

A

R E P O R T

COMPILED BY THE

NATIONAL AQUATIC RESOURCES AGENCY

JUNE 1986



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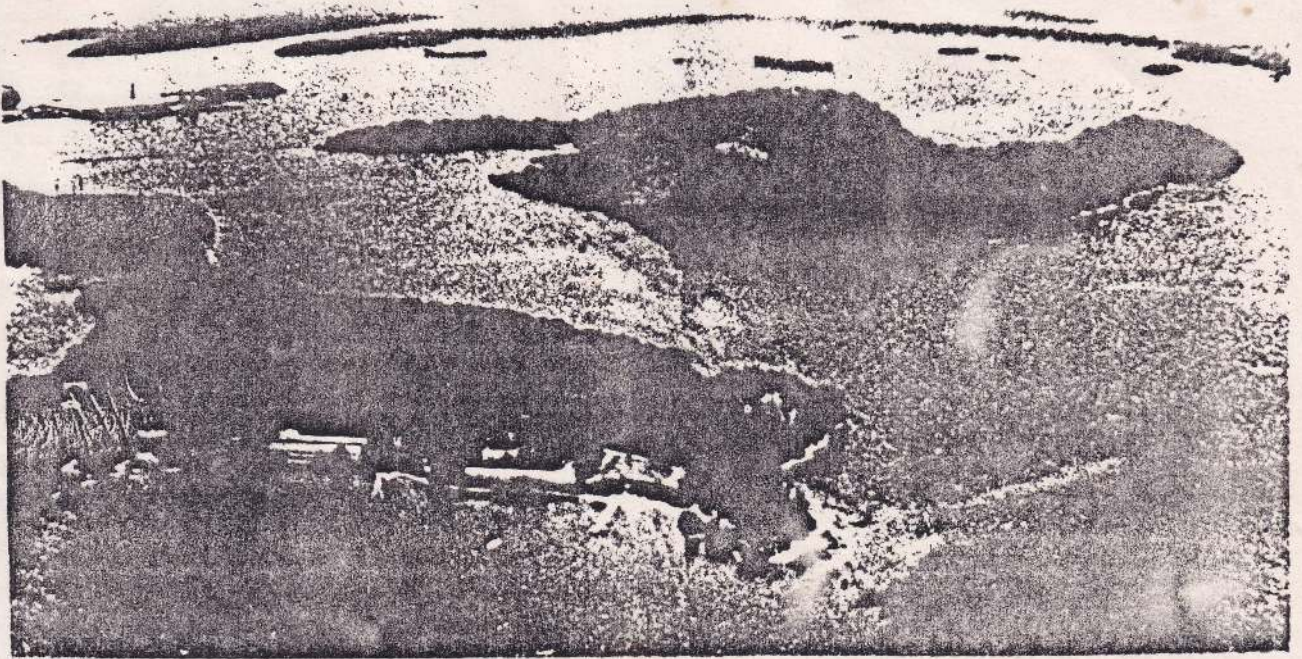
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TRINCOMALEE

An Integrated Development Perspective

A Report compiled by the

National Aquatic Resources Agency

in collaboration with

Urban Development Authority

Sri Lanka Ports Authority

University of Moratuwa

University of Peradeniya

Department of Wildlife Conservation

Department of Government Archives

Department of Telecommunications

Department of Archaeology

Tourist Board

Wildlife and Nature Protection Society

Greater Colombo Economic Commission

(Revised - August 1986)







P R E F A C E

From time immemorial, Trincomalee has held a great significance primarily on account of the strategic importance of her harbour. One of the finest in the world, this natural harbour has been the scene of numerous battles for control especially among European Powers during the Colonial era. During WW-II, Trincomalee was the home for the British Far-East Fleet after the fall of Singapore. With the dawn of the nuclear age, although the strategic significance of Trincomalee may have declined somewhat, the economic and political significance has greatly increased.

Since Independence, Trincomalee has attracted the attention of various proposals for development. Particularly noteworthy are the efforts of the late 1960s and late 1970s when development of the area received the serious concern of the Government. However, the inadequacy of infrastructure and pressing development priorities precluded the initiation of its development. It is significant to note that the first major foreign investment venture since the change of Government in 1977 and the liberalization of economic policies, was located in Trincomalee. However, since then, only marginal development has taken place in the locality.

It is projected by planners that the implementation of the gigantic Mahaweli Development Programme will bring about an influx of hundreds of thousands of settlers who will inevitably drift towards Trincomalee as their outlet to the coast and that Trincomalee will emerge as a growth pole or counter-magnet as Colombo has been for the south-western and central regions. The yet untapped, vast multi-faceted development potential of Trincomalee is a national asset which can be realized fully only through planned integrated development. The economic stability reached over the early years of the eighties, the completion of the Mahaweli Development Programme and successful establishment of the Investment Promotion Zones - the major development undertakings of the Government, now paves the way for turning to the remaining major development venture by the Government- Trincomalee.

The untold suffering and violence inflicted upon the people of this region in recent times by secessionist terrorists underlines the perceived significance of Trincomalee in the context of their aspirations. Trincomalee remains an issue central to the process of political settlement now underway. The restoration of conditions of normalcy would facilitate the initiation of the long-awaited development programme for the region.





Realization of the optimum development potential of Trincomalee as influenced by the port facility it provides, extends the development requirements beyond the confines of the present town deep into the hinterland, and in fact, to the outer periphery of the administrative district of Trincomalee.

In Trincomalee, the nation has an unique natural feature of exceptional beauty, characterised by the heavily indented coastline comprising of numerous bays and coves, and lush vegetation reaching down to the sea from the headlands and high ground of the Inner Harbour area. Remoteness of location, and inadequate Governmental consideration had so far precluded Governmental recognition of the unparalleled natural characteristics and beauty which demands that it be declared a national heritage. Such recognition is vital in a development context, where the balance between development and environmental concern - very much a modern day concept of global acceptance, is still to be fully recognised and applied by all administrators. Recent Governmental policy on land use which postulates the optimum realization of the development potential provides the key to rational, integrated development planning and implementation perspectives which must guide the development of Trincomalee.

On account of the dominant maritime characteristics of Trincomalee and the broad multi-disciplinary approach of the Agency, the National Aquatic Resources Agency has taken a strong interest in the aspects of Trincomalee's development as relevant to its work programme. Considerable priority has been given to the study of the broader development context within which management of marine and coastal areas, and aquatic resource development would take place.

The present preliminary report was prepared by the National Aquatic Resources Agency (NARA) in collaboration with the major Governmental entities concerned with Trincomalee, viz:

Urban Development Authority  
 Sri Lanka Ports Authority  
 University of Moratuwa  
 University of Peradeniya  
 Department of Wildlife Conservation  
 Department of Government Archives  
 Department of Telecommunications  
 Department of Archaeology  
 Tourist Board  
 and  
 The Wildlife and Nature Protection Society.

It represents the initiation of a response to the pressing planned development need of the region where ad-hoc development has begun to seriously threaten attainment of the national ideal of realization of the maximum development potential.





What is contained here is a compilation of the relevant background elements, the various individual development perspectives, and the basic concept of an integrated development plan. The next stage is the preparation of a preliminary synthesis of these elements which would constitute the basic plan. Rational management demands that other activities arising from the unique features of Trincomalee are examined in a multi-disciplinary integrated framework comprising of all Government entities concerned. The process initiated by this preliminary study must necessarily be carried forward in that context, with a view to early implementation of infrastructure building and development activities in the Trincomalee region.

Dr Hiran W. Jayewardene  
(Co-ordinator)  
Chairman  
National Aquatic Resources Agency.

26 June 1986.





Committee for the Study on  
"Trincomalee: An Integrated Development Perspective"

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Trincomalee  
An Integrated Development Perspective

Contents

Part I

- I.1 Background
- I.2 Geography
- I.3 Geology of the Trincomalee Area
- I.4 History of Trincomalee

Part 2

- Development Framework and Potential
- 2.1 The Existing Development
- 2.2 Agriculture
- 2.3 Port Development and Shipping
- 2.4 Marine Resources
- 2.5 Industry and Investment
- 2.6 Tourism, Recreation and Archaeology
- 2.7 Energy
- 2.8 Transport and Communications
- 2.9 Wildlife and Nature Conservation

Part 3

- Integrated Development Perspective
- 3.1 Concept
- 3.2 Planning Perspective
- 3.3 Institutional Framework





Appendices

Appendix I	Sites of Archaeological Interest
Appendix II	Maps of Sri Lanka, showing demography and development activities.





## Part I

### TRINCOMALEE An Integrated Development Perspective

#### 1.1 Background

In recent times, Trincomalee has attracted the attention of both policy makers and investors due to its vast potential for development, both in Agriculture and Industry. The District is abundant in natural resources such as mining and agricultural products. However, it is sparsely populated and is yet to be economically fully developed, due to the lack of social infrastructure and relatively low employment opportunities. The Government's decision to launch the "Accelerated Mahaweli Development Scheme" was the most important step in this respect and the scheme has already brought about significant improvements in the social and economic condition in the northeastern Sri Lanka including the District of Trincomalee. It is interesting to note that with the commencement of work on Mahaweli Project and the establishment of a large number of Industrial Plants in and around Trincomalee, an increased awareness on the impact of these projects on environmental and socio-economic aspects has been created.

Trincomalee has been an international Sea-Port and an economically important coastal city since the 6th century B.C. However, around the turn of the century with the development of the port of Colombo, Trincomalee became less important as a sea-port and a naval base. With the realization of the vast potential for development of the region in the 40's and 50's, Governments of the day started laying increased emphasis on Agricultural development of the region using agricultural reservoirs and tanks which existed. It is interesting to note that since then a large number of studies have been, and are being, carried out in the region on subject areas such as Geography, Demography, Environment, Agriculture, Industrial Development etc. However, it is regrettable to note that many of these studies, mostly carried out by governmental bodies, have been carried out on an ad hoc basis to fulfil certain specific objectives rather than to achieve any clear cut objective of national interest. On account of the prominent marine characteristics of the area and considering the special significance that the marine environment has in the context of the major development projects in the area, the National Aquatic Resources Agency, from its inception, has endeavoured to build up a satisfactory data base on marine, riverine and estuarine habitats in the area and activities related to these. The Agency has also felt that at this juncture it is most opportune to broad base this attempt and highlight the necessity to embark on an integrated approach in planning development projects in the area.

The present study is an attempt to pool together the available data and information so as to facilitate the use of



## 1.2 Geography

From a geographical perspective, Trincomalee is favourably sited to facilitate international relations. Basic considerations in this connection include internal reorganization and the need for a town-region development strategy.

Trincomalee is a coastal town, bordered on the East by the open sea and on the West by the Trincomalee Harbour. The Southern boundary is the Osterburgh Hill where the naval camp is located. The Northern and North Western directions are bounded by Uppuveli Village Council (V.C.). The larger portion of the town, comprised of wards 1-10 (excluding ward 6), has a basin type of formation surrounded by elevated areas of Swami Rock Ores Hill, and Abayapura. The highland areas are subjected to erosion due to construction activities. At some parts erosion has caused siltation in the lagoon area of Yard Cove and this in turn has led to flooding of the inland areas curtailing development. Areas of Sirimapura, Samatu Len Vihara area are subjected to floods.

The town is over 4 miles from North to South and 3/4 miles in width and the present town centre is not centrally located. The main roads except Trinco-Pulmoddai road enter the town at or near the Anuradhapura junction which falls within both Trincomalee UC and Uppuveli V.C. Due to this feature a second town centre has made its appearance at this point. As the Uppuveli V.C. area is not under its authority the UDA it is not in a position to bring the development of the area in accordance with an overall plan.

The geographical location of Trincomalee along the Eastern Coast of Sri Lanka at 8°\_36' North latitude and 81°\_15' East longitude, commanding the entry to the Bay of Bengal and the Indian East Coast (with very few suitable ports and harbours) emphasizes the importance of the geographical position in South and South East Asia. The fact that Trincomalee is one of the largest and finest natural harbours in Asia highlights the need for development as a commercial harbour and port and also as a strategic harbour.

Trincomalee's geographical and geostrategical importance has been demonstrated in the past by its use as a British naval base in their efforts to control the Eastern Coast of India and the Bay of Bengal. Cordiner (1807) referred to it as "the most important station in the coast of Ceylon possessing that noble and commanding harbour which alone renders the island so valuable as a protection to our Indian Commerce and security to the British Empire in the East". During World War II, Trincomalee became the chief naval base and headquarters of the entire South East Asian Command. Its development for strategic and military purposes will be influenced by global geopolitical circumstances and national security and defence priorities and foreign policy objectives.



The average temperatures in Trincomalee are around 82.3°F. Normally the average temperatures are below 80°F in November to January, above 84°F in April to June and around 80-82°F in the other months (Table I).

Rainfall is the critical factor. The average rainfall is between 65-70 inches but is seasonal and more than 50% is received during the Northeast monsoon period from November to February. The wettest months of November and December receive more than 10 inches and have around 20 days of rain in each month. The dry period is from April to August. Drought is a common feature and account for nearly 140 days in each year and this is a very significant factor in the development of the town.

Temperatures are co-related to sunshine which is measured from 7 a.m. to 5 p.m. and is expressed as a percentage. Highest sunshine, 78-81% is experienced between 10 a.m. and 3 p.m. and coincide with high temperatures between 85°-88°F.

Relative humidity increase to more than 70% during the rainy months of November to February and is less than 60% during the dry months of June to August. High temperatures above 80°F combined with high humidities make it uncomfortable physiologically particularly in an office environment without air-conditioning or ventilating facilities and in compact and congested housing. However, two phenomena operates to ameliorate the physiological discomforts. These are the incidence of alternating land and sea breeze, particularly in the evenings and the fact that June to August are windy months. The direction of winds are predominantly from the north, northeast and east and are absent from the south, southwest and west.



Table 1

TRINCOMALEE (Height above Sea Level 99 Feet)Rainfall during 1936 with Offsets from Average 1911 - 30 (From Colombo Observatory Report 1936)

	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG:	SEP	OCT:	NOV:	DEC	TOTAL
1936	5.81	3.96	3.37	0.02	0.81	0.04	7.21	4.31	4.77	5.61	9.18	25.05	70.4
Offset	-2.9	+1.9	+1.0	-2.0	-2.6	-1.0	+5.3	+0.8	+1.0	-3.5	-5.1	+12.4	+5.3

Rain Days in 1936 with Offset 1911-30

	(receiving at least .01 inch per day)												
1936	10	7	7	1	6	2	6	6	9	12	27	24	117
Offset	-3	+3	+1	-4	0	-1	+2	-1	+1	-4	+8	+6	-8

Wet days (receiving .4 inch per day)

1936	9	6	5	0	3	0	6	6	8	10	21	21	95
Offset	-2	+3	+1	-4	-1	-2	+3	+1	+1	-3	+4	+5	+6

Monthly Mean Temperatures in 1936 with Offset in degrees F

1936	78°	80.0	81.2	85.0	85.4	85.2	85.6	84.8	83.4	81.4	79.4	78.1	82.3
Offset	+0.2	+0.8	+0.4	+1.6	+0.7	+0.1	+0.8	+0.8	-.6	0	+0.4	+0.3	+0.5

Relative Humidity Monthly Means %

1936	75	74	74	67	66	56	58	58	68	72	79	82	69
Offset	-3	+4	+4	-1	+2	-4	-1	-2	+6	+2	0	+3	+1

Incidence of drought

Absolute drought - (Any period of at least 15 days consecutive days which is credited with .01 inch of rain or more) 147 days  
 Partial drought - (Any period of 29 days or more over which the mean daily rainfall does not exceed .01 net per day)  
 Dry Spell - (A period of at least 15 consecutive days to which is credited .04 inch of rain or more)



### 1.3 Geology of the Trincomalee Area

The geology of the Trincomalee area has been described by Adams (1929), Coates (1935), and Cooray (1965). The Geological Survey Department conducted a survey of the Trincomalee and Nilaveli sheets in 1975 on a one inch to one mile scale. A Geological map has been prepared but not published. The major structures of the area has been identified by the analysis of aerial photos and is given in the structural map of Sri Lanka. The National Aquatic Resources Agency initiated in 1984 a detailed geological mapping programme of the Trincomalee area on a 2 inch to one mile scale. On completion of the survey a geological map was prepared (Fig. 1).

#### Outline of the Geology

The island of Sri Lanka consists, for the most part, of precambrian metamorphic rocks, except for the northwestern, narrow coastal belt which is underlain by Miocene limestone and calcareous sandstones. The Precambrian of Sri Lanka has been sub-divided into three major divisions (Cooray, 1967).

- 1) Highland Series - Consisting of charnockites, quartzites, crystalline limestones, garnetiferous gneisses, hornblende gneisses and granulites.
- 2) Vijayan Series - Consisting of hornblende biotite gneisses, migmatites and granites.
- 3) Southwest Group - Consisting of charnockites, wollastonite-scapolite gneisses, calc gneisses and cordierite bearing gneisses with sillimanite.

The Trincomalee area is underlain with rocks of the highland series. The highland series rocks found in the area are mainly a succession of quartzites, crystalline limestones, charnockites, garnetbiotite gneisses and pink feldspathic gneisses.

#### Description of rock types

##### Quartzites

Quartzite is the most prominent rock in the area and include the more or less pure quartzite, eldspathic quartzites and garnetiferous quartzites.



The pure quartzites are generally coarse, granulites or massive, whitish rocks in which no foliation or bedding is visible. In the feldspathic varieties, lenses and patches of kaolinised feldspar are scattered throughout, sometimes in marked orientation. These are often stained and give the whole surface of the rock a brownish clayey appearance. The impure varieties have distinct bedding planes. The garnetiferous quartzites are either spotted rocks or contain garnets concentrated along certain places. Very often pure quartzites may pass along and across the strike into feldspathic quartzites.

The quartzites, especially the impure varieties are highly jointed, fractured rocks, the fractures being closely spaced, making the rocks extremely friable and gritty when weathered. These fractures are nearly always at right angles to the bedding and at times may be mistaken for the latter. The intensity of fracturing appears to vary with the purity of the quartzite, impure bands being highly fractured and purer bands being less so and consequently appearing to be coarser grained.

### Distribution

Quartzites are whitish in appearance making them the most conspicuous rocks in the area. They occur throughout and vary from a few centimeters to about 30 meters in thickness and are interbedded with other metasedimentary rocks. Owing to the great variation in size and to their frequent repetition in the succession, only the major bands have been mapped and shown in the geological map. Very often bands and lenses of basic charnockite of variable thickness are found completely enclosed in quartzite or quartzite bands may be present in dominantly charnockitic zones. The quartzites form prominent northeast/southwest trending long, low ridges and run-out to the sea in such cliffs such as Fort Frederick and Ostenburg Ridge (Fig. 1).

The quartzites are most prominent in the inner harbour area. Several major bands are present here and form the Elephant, Ostenburg, Clappenburg, Engineer and Cod Ridges, China and Ores hills (Fig. 1). The northern and southern extremes of Great Sober Island and a large portion of small Sober Island are also made up of quartzites.

In the northern section of the Trincomalee sheet two major bands of quartzites are present and form part of the Kanniyai Synforms. The famous Kanniyai hot wells are in fact underlain by jointed quartzites thereby enabling hot water to be brought up from great depths. Quartzites are generally absent in the southern portion of the sheet from Muttur to Seruwila.



### Crystalline Limestone

There are no large conspicuous bands of crystalline limestone in the Trincomalee area. However, three narrow bands were mapped in the area during the NARA survey (Fig. ) Owing to rapid variations and paucity of exposure they cannot be followed, except in rare cases for any great distance. The crystalline limestone vary from fine to coarse grained and from pure to impure. When relatively pure the rocks may be white or greyish white and when impure they may be dark greyish and contain the accessory minerals phlogopite, apatite, spinel, pyrite, graphite and rarely sphene.

### Distribution

Three bands of crystalline limestones are found in the area. One band lies in the valley bottom of the Petroleum Corporation upper tank farm area and runs below the China Bay railway station into the inner harbour at Harden Point. Morphologically it is evident that this band extends into Tambalagam Bay, between the 177 and 177 1/2 mile posts of the railway line. Remnants of another similar band are found at Marble Beach.

Three elongated patches of Marble were found by the NARA team on the southeast slope of the ridge at the new circuit bungalow of the Ceylon Fisheries Harbour Corporation (Cod Bay) and on the Trincomalee-Dambulla road near the turn off to China Bay and Mud Cove (Fig. 1).

In the southeast of the Trincomalee sheet several small bands of crystalline limestone were mapped near Eralkali Vetai and the Ullackalie Lagoon (Fig. 2).

### Charnockite

A significant feature about the charnockites is that they are always interbanded with the surrounding rocks of the highland series. This interbanding is seen on all scales from charnockites several hundred meters and extending along the strike for several kilometers to basic charnockites 1-2 centimeters thick, the latter occurring particularly in quartzites. The basic charnockites are generally dark coloured almost black fine to medium grained rocks. They occur mostly as parallel-sided bands or as lenses in quartzites and other rocks of the highland series, and as bands, lenses and streak in more acidic charnockites.

The intermediate charnockites are banded on gneissic rocks greyish green in colour. Garnets, are present in the charnockites and are usually scattered throughout the rock but may sometime be concentrated in streaks.



The acid charnockites are light greenish in colour when fresh, but on exposure to air turn to a dark greasy grey, and consequently be mistaken for intermediate varieties.

#### Distribution

Most of the bays in the inner harbour such as Nicholson's Bay, Malay Cove, Orlande Cove, Deadman's Cove and Sweat Bay are cut into charnockites (Fig. 1).

Several prominent bands of charnockite are found in the Trincomalee area. The area between Elephant and Ostenburg ridges, Diamond hill, the China Bay air port and part of the Kanniya Synform consists of charnockites (Fig. 2).

Charnockite is the most prominent rock in the southeast of Koddigar Bay and all major hills and ridges are composed of it (Fig. 2).

#### Garnet Biotite Gneiss

This rock is leucocratic and streaky in appearance with contorted foliation. It is heavily veined with quartz-feldspathic material. Garnets are scattered throughout the rock but appear to be concentrated in the biotite portions. The gneiss is streaky with large garnet clusters and biotite-rich streaks.

#### Distribution

Four prominent garnet - biotite gneiss bands are found in the Trincomalee area. One band was mapped in the area between Snug Cove and Clappenburg Bay. (Fig. 1). Another prominent band was noted off Cod Ridge and could be traced north of Engineer Ridge.

Southeast of Koddigar Bay a broad patch of garnet - biotite gneiss is located at Sampur. The garnet biotite gneiss band near Ullakulam is not traceable due to the lack of fresh outcrops.

#### Other rocks and their distribution

A pink feldspathic granulitic gneiss is present north of the inner harbour. This is a very prominent rock in the north of Trincomalee, but is not found around the harbour. In the Nilaveli area outcrops of pink feldspathic gneiss form spectacular series of ridges, consisting of piles of jointed blocks varying in shape from mushroom shaped pinnacles to wall-like ridges and stand out from the flat lowland.



A tracable coarse-grained Anorthosite band closely associated with crystalline limestone was located near the Ullackallie lagoon (Fig. 2).

A coarse grained scapolite-diopside rock is found at the old quarry near the Ceylon Fishery Harbour Corporation, Cod Bay circuit bungalow (Fig. 2). Several fine grained prophyritic basalt dykes were observed near this coarse grained rock. Dolerite and pyroxenite dykes were seen in outcrops near the coast at Hard Cove, Sober Island, Deadman's Cove and near the road at China Bay airport.

The area from Muttur to Tambalagam Bay is covered by the Mahaweli flood plane and is overlain with recent alluvial and lagoonal deposits.

Crystalline powdery masses of Sulphur was discovered in a narrow fracture zone with disseminated flake graphite at Muttur and surface occurrence of Copper/Iron ore was noted at Eralkali Veitai, 6.4 km north of Seruwila.

### Structure

The main structural features of the Trincomalee area are shown in the appended geological map (Fig. 2). A very distinctive characteristic is the northeast/southwest trend of the various rocks types and the predominant southwest dip of the rocks north of Koddiiyar Bay and the predominant northwest dip of the rocks south of it. The foliation dip in the majority of rocks is moderate to steep varying from  $45^{\circ}$ - $85^{\circ}$ .

Airphoto interpretation and field observations of the structural features of the area indicate that it is characterized by two southwesterly plunging antiforms, a synform, a steeply dipping basin ("arena") and a major Mega-lineament.

Between Elephant Ridge and Ore's hill, there occurs a major antiform and a complementary synform (Fig. ). Elephant Ridge and Ostenburg Ridge, are the limbs of a major antiform with a northeast/southwest axis running across Dutch Point and plunging southwest. The fold is seen very clearly at Dutch Point. This is an asymmetrical antiform. The axis of the adjoining synform falls across Great Sober Island and the Trincomalee town. The nose of this synform is in close proximity to Fort Fredrick. Another major antiform is seen across China Bay (Fig. 2).

A conspicuous, plunging synclinal structure is seen north of Trincomalee at Kanniyai (Fig. 2). This steeply dipping basin is similar to an 'arena'. The cove of the 'arena' consists of pink feldspathic gneisses that dip almost vertically. A minor fold is seen at Biggs Point.



Other significant structural features of the area are the faults oriented almost transversely with respect to the regional trend of the folds and foliation. The direct effect of these faults on the geological structures is seen in Cod Bay and at Round Point (Fig. 2). One fault at Cod Bay runs across Palaiyuttu and displaces the quartzite ridge north of it. The other fault is through Tekiluttu and displaces the same ridge at another location. At Round Point the quartzite ridge is laterally offset by a fault trending N 10°E.

On the basis of an observed gravity low running along the eastern boundary of the Highland Series (Hatherton *et al* 1975), the presence of brecciated silicified rocks and calc-gneisses with tectonic breccias in the eastern part of the Polonnaruwa sheet and the Submarine Canyon at Trincomalee continuous with the Highland Vijayan contact has been reported. It is postulated that a major Mega - lineament called the 'Mahaweli lineament' cuts across the eastern section of Polonnaruwa and continues northeast to Trincomalee and probably runs into the deep Submarine Canyon.

### Coastal Morphology

The transgrading sea during the Holocene is thought to have submerged the Trincomalee coastal track. Many islands, bold ridges, low rises and plateaux rose above it. The present pattern of estuaries, deltas, bay head barrier beaches and lagoons were formed by the filling in of the lower Mahaweli valley which was under water during the Holocene transgression.

As mentioned earlier the structure of the Precambrian rocks in this area have a transverse trend in relation to the coast. This type of coast, particularly when it is formed of solid crystalline rock as in Trincomalee is usually irregular in outline. The irregularity often results from variation in resistance to marine erosion of the rock types outcropping along the coast. North of Trincomalee where the coast line is made up of rocks having almost equal resistance to weathering such as quartzites, charnockites and pink feldspathic gneisses the irregularities are rather on a small scale. The more resistive rocks (quartzites) form small headlands while the less resistive rocks are etched away to form small symmetrical bays in which bay head beaches accumulate.



In the Trincomalee harbour area, where the structures are such that hard rocks (quartzites, charnockites) and soft rocks (marbles, garnetiferous gneiss) alternate on a large scale, the headlands are more impressive eg. Swami rock and the bays deeper (China Bay). Another interesting feature in Trincomalee is that charnockites which are generally very resistive to weathering are eroded, weathered extensively and from a large part of the Bays and Valleys. This could possibly be attributed to the fact that charnockites are more susceptible to chemical weathering, which is prevalent in Trincomalee. On the other hand quartzites which readily undergo mechanical weathering, make up most of the ridges. This indicates possibly that the coastal track in Trincomalee would have been submerged during past geological periods, thereby leaving the quartzites intact to form the conspicuous ridges. The formation of these deep bays and coves have been also controlled structurally by minor and major faults of the area.

This type of coast according to Shepard (1965) is the Ria type and is more compartmentalized from the point of view of ease of transport along it. Frequently different types of beach material are found in neighbouring bays and each form a unit in the coastal system. This is exemplified on the Trincomalee coast where neighbouring bays may contain either large boulders, quartz sand, ilmenite rich sand or garnet rich sand indicating a lack of transport between them. Heavy mineral analysis in two adjacent bays have also illustrated this point where one bay contains a high percentage of ilmenite (70%) or garnet 60% and the other be almost devoid of these minerals.

The shores of the semi-circular bay of Koddigar are zones of interaction among processes related to fluvial deposition, tides and refracted waves entering this bay (Swan, 1981). The barrier beaches and some of the ridges that cut off Tambalagam Bay from the sea, make sedimentation by fluvio-organic processes very active (Swan 1981). The many deep coves and inlets in the Trincomalee harbour receives no river sediments and therefore retains its highly indented character.



#### 1.4 History of Trincomalee

The history of Trincomalee is closely linked with the early history of Sri Lanka. Trincomalee was known by many different names in the distant past. According to the chronicle Mahavamsa, during the Anuradhapura and Polonnaruwa periods the spot where Mahaweli ganga met the sea was known as "Gokanna". The Mahavamsa also refers to it as "Gokanna Pattana", the sea port where the earliest Aryan settlers who came from the Northeast India are supposed to have landed. According to historians, King Devanampiyatissa sent his delegates to King Asoka of India through this sea-port and Fa-Hsien, the Chinese traveller too had come to the island through the port of Gokanna. Furthermore, according to legend King Rama of India established a settlement called "Rama Gona" at Trincomalee and this has later been known as "Gokanna" during the Anuradhapura period.

Historically, the Anuradhapura Kingdom had two sea ports of fame. One was "Mahatiththa" in the Northwest of the island and the other "Gokanna" on the Northeastern coast. The Kings who ruled from Anuradhapura and Polonnaruwa has had control over the port of Gokanna, where a flourishing trade has existed between Kalinga Kingdom and Trincomalee.

During the 3rd Century King Mahasen has built the Gokanna temple at Trincomalee.



The Cholas and Pandyan who had extended their empires in Southern India were interested in Sri Lanka too. This resulted in their making invasions into Sri Lanka and in the eighth century made several inroads. The Chola and Pandyan influence could easily be seen in the Trincomalee Hindu Temple on which Kings bestowed much attention. The temple was dedicated to the Hindu God Koneswara by them, and enlarged considerably. However, an inscription in Sanskrit by Choda Ganga Deva dated 1223 A.D. indicates that modern Trincomalee was earlier known as "Gokanna" or "Gokarna" and has been a Buddhist place of worship.

During the time of Parakramabahu I, Gokanna has been used by the King to station his armies and to despatch his navy to Burma.

#### Derivation of the name Trincomalee

Many different views have been given to the derivation of the name "Trincomalee". It is believed that "Gona Gamaka" of the Anuradhapura period changed to "Kona" or "Konesar" during the Chola domination of that part of Sri Lanka during the 10th and 11th centuries and further changed to "Kona" "Konesarmalai" meaning "The sacred mountain of the land of "Kona" or "Konesar" viz. the God Isvara. It is also suggested that in Tamil, "Tiru" means sacred, "Kona" the land of Kona and named as "Trikona Malai" and also "Tiru Kona Malai". Later, this name was written as Trincona-Trinkenmall-Trinkille-nale-Trincomale-Trincomalee.

#### Portuguese Period

When Portuguese came to Sri Lanka at the beginning of the 16th century, Trincomalee area has been under the Vanniyas who were called "Kings of Trincomalee". According to Dr P.E. Pieris, when Bhuvanakabahu VI of Kotte was shot by Antonis de Barcelos, Vidiya Bandara has taken the Corpse and has cremated it and ashes have been taken to Trincomalee.

The Portuguese took interest in fortifying Trincomalee as early as 1602 A.D., as they considered it an important port on the eastern coast. Geronimo de Alzavedo, the Portuguese Captain General in 1612 has made an unsuccessful attempt to erect a Fort at Trincomalee. Trincomalee was considered by Portuguese to be important to gain control of the Jaffna region and to prevent the Dutch from negotiating with the King of Kandy.

Kottiar Bay in the Trincomalee harbour has belonged to the Kandyan King and the peace treaty of 1617 has placed Trincomalee in the territory of the Kandyan King. Even before the Portuguese came to Sri Lanka, the port of Trincomalee has been used by the King of Kandy to export arecanuts and elephants to India and the Saltern at Trincomalee has supplied the kingdom with salt.



Muslims who traded in this area have also supplied the Kandyan Kingdom with its necessities.

In 1620, Constantine De Saa, a Portuguese General has taken steps to erect a Fort at Trincomalee as the King of Kandy, King Senarat agreed to give anchorage facilities to the Dutch. The spot chosen to erect a Fort at Trincomalee was the site of the famous Konesar Hindu temple, which was built over a Buddhist temple, Gokanna Vihara, by King Mahasen. The Hindu temple was built on the isthmus of promontory which protected Trincomalee harbour. The Danes recognising the strategic importance of the site had entrenched themselves in it in 1620. However, they left the original structure more or less intact when they finally evacuated it in 1621. Constantien De Saa was not content with the security of the fort which existed and then demolished the old temple building and used the material for the construction of the triangular Fort with three bastions. Eight pieces of artillery brought from Goa were supplemented by eleven guns salvaged from the Danish ship "Copenhagen" which sunk off Kottiyar in 1620. Of the three bastions, the northernmost, Santa Cruze, was built in the site of the highest buildings of the former temple. It was provided with six of the largest guns to defend the harbour. From this key basti one wall ran North-westwards for about fifty paces across the isthmus to the other basti n Santa Lago, cutting off the promontory from the mainland. Another wall extended northwards from Santa Cruz for one hundred paces and terminated in the sea at the bastion of Santa Antonio. The stretch between Santa Lago and Santa Antonio was difficult of access from without, due to the rocky nature of the coast, but the Portuguese built a wall on the topmost rocks to eliminate all danger of attack from the narrow sea beach. The building of the Fort necessitated the transport of stone and lime from Jaffna and other parts of the coast to the top of the rocks.

#### Dutch Period

In 1636, the King of Kandy, Rajasinghe II agreed to hand over the Kottiar Bay in Trincomalee to Dutch if they helped him to drive away the Portuguese from the island. The Dutch, realizing the importance of Kottiar Bay for international trade, captured Kottiar Bay in 1638. They closed the Bay and as a result, the Kandyan King could not trade with other countries. On May 2nd 1639, the Dutch captured Trincomalee from the Portuguese. In 1659, Captain Robert Knox, master of the British ship "Ann" put into the Bay on 19th November 1659, and his son were taken prisoner by the Kandyans.

The Dutch invasion of Kandy in 1765 under Willem Falck resulted in a treaty in 1766. Under the clauses of this treaty Trincomalee came under the Dutch. Under the Dutch rule Trincomalee came under the Dissava of Jaffna.



it should be the seat of British Government in Sri Lanka. 500 ships of the time could enter it with ease. The harbour is accessible at all season. The hinterland supplied good wood and water. At the peace of Amiens in 1802, Sri Lanka became a crown colony of the British Empire, because the port of Trincomalee was vital much more than the cape of Good Hope to the security of Britain's East Indian possessions. Lord Nelson regarded Trincomalee as the best harbour in the world.

However, after the end of Napoleonic war in 1815, the strategic importance of Trincomalee was lost and Trincomalee was desolate and neglected. In 1815 a small dockyard was started by Capt. Puget. In 1833, under the Colebrook-Cameron reforms, Eastern province was created which also included the district of Trincomalee.

Around the turn of the 19th century, the British Government of the day has thought that a naval base would bring capital into the island. It would attract secondary industries and encourage the opening up of the barren hinterland around Trincomalee. In 1810 the decision was taken in London to break up the naval establishment at Madras and transfer it to Trincomalee and the plans were also drawn up to create a very good naval base at Trincomalee. However, the ambitious plans to develop Trincomalee ended only with a row of buildings being put up along the shore below Ostenburg Ridge. As a result of the acute shortage of labour in Trincomalee, the development plans were abandoned. Due to wide spread diseases Trincomalee was called by the people of the day as the "Pest-house". The census of population for 1824 shows that in the whole district of Trincomalee there were only 19,000 people. There were only 214 fishermen in the whole district of Trincomalee in 1824. The hinterland too developed very slowly and was barren with very little agricultural activity.

During the second quarter of the nineteenth century, Trincomalee although limited in size and scope as a dockyard, remained the principal British store-depot of the east and the harbour upon which the East Indies Squadron was based.

Rigid economy of the British Treasury resulted in the deterioration of the dockyard buildings. As there was no hostile force against British during 1820-1830 period, the strategic importance of Trincomalee faded. The Colonial Government lost all interest in Trincomalee after 1822. Between 1830-1837, attempts were made to clear the rocks and deepen the Paumban channel so as to provide a shipping line between India and Sri Lanka. This plan failed after 1844 as Hong Kong surpassed the port of Trincomalee in importance as the naval depot of east.

Although the steam-ships did not require a shelter from North-east monsoon, Trincomalee remained unquestionably the best harbour in Sri Lanka.



In 1665, the Dutch hastened to Trincomalee on the rumour that the British proposed to seize this place, and build another fort there.

The events in Europe during the war between France and Holland had an impact on the Trincomalee harbour. In March 1672, a large French fleet commanded by Admiral de La Haye, appeared at Trincomalee and seized an island at the entrance to the inner harbour. Rajasinghe II, presented the entire bay to the French Admiral and allowed him to occupy Kottiar. When de La Haye sailed away on the 9th of July 1672, the Dutch attacked the fort and occupied it. The increasing power of the British in India made the protection of the inner harbour of Trincomalee a matter of urgency. The war between the French and British in Europe led the French to capture Trincomalee in 1782 and in return handed it over to the Dutch.

#### British and Trincomalee

It is interesting to note that the British navy was using Trincomalee to anchor their ships in 1746 when the Dutch held Trincomalee. Trincomalee's vital strategic importance was recognized by the British in the second half of the eighteenth century, specially when in 1781, the need for a base on the east side of India became essential. This situation existed from 1746-1783 and again in 1795. In 1795, French overran Holland and forced the British to seize Trincomalee so as to forestall the French.

The strategic importance of Trincomalee to the British towards the end of the eighteenth century was summed up in the following manner. "The harbour alone renders the island valuable as a protection to our Indian Commerce. The harbour from its central position and easy ingress and egress which it affords at all seasons is better adopted for being made a marine depot and rendezvous for His Majesty's Squadron than any station in India."

Many writers in 1800, expressed the notion that Trincomalee was the "Key to the defence of India" and a "second Gibraltar". The reason for this was the strategic importance of Trincomalee and the extraordinary potential of its massive harbour. The British developed this harbour into a major naval base.

In 1801, William Pitt, the Prime Minister of England expressed that Trincomalee was the most valuable Colonial possession. Governor Maitland considered Trincomalee the real key by possession of which alone (you) can hold the naval superiority of India.

It was earlier suggested by the British that as Trincomalee was the convenient port and easy intercourse between it and the neighbouring Indian Peninsula,



it should be the seat of British Government in Sri Lanka. 500 ships of the time could enter it with ease. The harbour is accessible at all season. The hinterland supplied good wood and water. At the peace of Amiens in 1802, Sri Lanka became a crown colony of the British Empire, because the port of Trincomalee was vital much more than the cape of Good Hope to the security of Britain's East Indian possessions. Lord Nelson regarded Trincomalee as the best harbour in the world.

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### The Existing Development

In 1846, coffee planters experimented sending their produce to Trincomalee for shipment instead of the Colombo harbour. The Master-attendants Department which looked after the berthing of ships at Trincomalee was withdrawn in 1850. Soon after in 1858 P. & O. steamer 'Ava' ran aground and was wrecked 12 miles from the port. The electric cable system which reached India in 1861 was extended to Trincomalee in 1864. The building of the Great Eastern raised hopes that Trincomalee would become the coaling station of the P. & O. route to Australia. However, this was not realized and gradually Trincomalee became solely a depot for coal and stores. The building of the Break Water at Colombo in 1870's made Trincomalee even less important for shipping lines.

Records also show that on 18th July 1887, Randolph Churchill has attacked the expenditure for Trincomalee as useless. Trincomalee cost 1,000 p.a. on maintenance and further 5,000 p.a. on wages. In 1905 Trincomalee was closed and its Garrison withdrawn on the orders of Admiral John Fisher.

The closing of the base and the withdrawal of the British Garrison threw about 700 men out of work and forced them to migrate to other districts of Sri Lanka. In 1920, the railway was extended to Trincomalee and thus linked it to the line between Colombo and Jaffna. In 1923 the Trincomalee dockyard was re-opened.

On 15.10.1957 British naval base at Trincomalee was handed over to the Government of Sri Lanka. Since then Trincomalee has been the area and port earmarked for future development projects. The Trincomalee port and its vast hinterland has tremendous potential for development, and if developed as a port would become once again the port of "Gokanna" of ancient fame and a key port in the Indian Ocean.

Trincomalee town emerged as an urban centre and settlements of Tamils and Muslims were concentrated along the southern periphery of the harbour. As a second phase, with the expansion of functions and activities connected with the commercialization of the port, industrialization, tourist promotion measures, fishery development and research activities town growth became rapid, settlements diverse and consisted of Tamils, Muslims and Sinhalese.

In the Trincomalee district, several peasant settlement schemes have increased the rural population.



## Part 2

### 2.1

#### The Existing Development

Over the last few decades, the growth of the Trincomalee district has taken place mostly in its hinterland. However, more recent development activities have influenced the town zones as well. Several policies, projects and schemes have been implemented in the district resulting in the restoration of the villages and the major irrigation systems namely Allai and Kantalai tanks, extension of the cultivable areas, changes in the infrastructures and patterns of land use, population and settlement distribution and ethnic composition. Urbanization has been reactivated; the old towns have increased their population and functions, several new central places namely the function centres and new towns of the Mahaweli development systems A and B areas have grown very rapidly as service centres to the expanding Agricultural Settlements.

Trincomalee district has increased its population from 188,245 in 1971 to 256,790 in 1981, at a rate of 3.3% per year. In 1981 urban population accounted for 32.4%, rural 66.1% and estate 1.5%, of the total.

Table 2 indicates population changes in the district on an ethnic basis in 1921 and 1981. Some of the salient features are:

- 1 In 1921, the Tamil settlements were confined to the coastal strip barely extending 10 miles to the interior. Sinhala settlements were few and were located in the interior. Vast tracts to the north of the district were uninhabited.
- 2 The restoration of the Allai and Kantalai Tanks and several village tanks was combined with Sinhala settlements.
- 3 Trincomalee town emerged as an urban centre and settlements of Tamils and Muslims were concentrated along the southern periphery of the harbour. As a second phase, with the expansion of functions and activities connected with the commercialization of the port, industrialization, tourist promotion measures, fishery development and research activities town growth became rapid, settlements diverse and consisted of Tamils, Muslims and Sinhalese.
- 4 In the Trincomalee district, several peasant settlement schemes have increased the rural population.



For example, at present there are over 6,325 allottees and 18,105 acres under paddy and 8,938 acres used in home gardening.

- 5 Certain changes have taken place in the ethnic composition in both the district and Trincomalee town. The Sinhalese population has risen from 5% in 1921 to 34% in 1981. They constituted the major ethnic group in Kantalai, Tambalagama and Seruwila divisions. The Tamil population has decreased from 53% in 1921 to 34% in 1981. They were the majority group in Trincomalee town and Gravets, Muttur and Kachchuveli divisions. The Ceylon Moor (Muslim) ethnic group has also decreased from 39% to 29% in 1981 and was the majority group in Kinniya division.
- 6 The ethnic composition of Trincomalee town appears to be balanced among the Sinhalese with 33.6%, Sri Lankan Tamils 33.3%, Sri Lankan Moors - 29.0%, and the minor ethnic groups namely Indian Tamils with 2.6%, Burghers 0.5%, Malays 1.3% and others 0.2%. However, both in the district and towns there are several ethnic pockets strongly upholding their cultural identities.

From a national perspective the development of the port, the town and the surrounding region (hinterland) deserves priority. In the recent past, Trincomalee has been developed as a commercial port and it attracts about one-sixth of the national export-import trade. With the expansion of this trade, the town's commercial sector has grown. Recent policies in industrialization, tourist promotion, fisheries, improvement of institutions and recreational facilities have activated urban growth and attracted settlements. The district (region) has also changed considerably in land use, population settlements, both physical and social infrastructures, and services.

However, in comparison to the Colombo Region Trincomalee district is relatively poor in transportation, utilities and services and these are constraints to rapid growth and development.

Urban development of Trincomalee comes under the purview of the Urban Development Authority. If it is to be planned as a rapidly growing town for a population of 100,000 (on the basis of the assumption that the present population of 44,613 will double by 2001), physical, social, economic and administrative aspects have to be carefully considered in relation to certain underlying basic geographical factors. Physical planning has to be based on micro relief and drainage.



TABLE 2

**POPULATION CHANGES IN TRINCOMALEE DISTRICT (1921/1981)**  
(On Ethnic basis)

Division (as in 1981)	1921			1981		
	Sinhalese	Tamil	Muslim	Sinhalese	Tamil	Muslim
Trincomalee town and gravets	3.6	75.1	18.5	28.1	58.5	9.4
Mutur	0.8	56.7	42.2	2.4	49.7	47.9
Kuchchaveli	6.9	59.1	34.9	14.1	44.5	41.4
Kinniya	18.8	36.0	45.2	0.4	3.7	92.3
Kantalai	4.0	35.0	60.2	83.0	5.3	11.5
Tambalagama	0.3	28.8	58.3	31.5	30.2	38.3
Seruvila	12.8	28.9	58.3	57.7	36.1	6.2
Morawewa and Femarakadawala	95.7	4.1	0.1	55.0	36.2	8.8
All divisions	4.5	54.4	38.7	35.8	34.5	29.7



The surface characteristics: whether flat or undulating, the degree of slope and sloping areas, hills and hillrocks, marshes and water bodies, sandy tracts and dunes, land subject to floods, tidal flats, areas subject to sea erosion, all influence the internal reorganization and development of the town, particularly in expanding its infrastructure, (road, water services, sewerage, electricity and telecommunication net works) and deciding on the character and intensity of development of specific localities.

Micro climatological elements such as temperature, rainfall, wind, sunshine and drought incidence or floods or natural hazards like cyclone, typhoons, tidal waves etc. have a direct bearing in the planning of public utility services, industrial locations, recreational amenities, open space, pollution control, conservation policies and also on individual decisions on selection of residential sites, the character of house construction and general orientation of housing in respect of sunshine, wind and ventilation.

## 2.2

### Agriculture

The importance of Trincomalee has been historically recognised primarily due to its deep natural harbour located in the path of global shipping lines. However, more recently, its land ward potential has also surfaced due to the development activities taking place in System A, B, C, D, H, I, J, K and L of the Accelerated Mahaweli Development Programme. Under the Phase I systems C, D and H will be developed while systems A and B will be covered under Phase II of the Development Programme. Phase III of the Programme will undertake development activities in the more northern systems I, J, K and L. Thus, it could be contended that the development of almost the entirety of about 700,000 acres of land, in addition to the land in the areas lying outside the Mahaweli Project, will gravitate towards the economic development and the urban environment of Trincomalee.

Nearly 42% of the land in the Trincomalee district, totalling nearly 1,138 sq. km., is under forest cover. This amounts to 6.9% of the total forest cover of the island. (Table 3).



Table 3

Forest Land in the Trincomalee District

District extent (sq.km.)	2714
Forest extent (sq.km.)	1138
Forest (%)	41.9%
Forest extent as a % of the total for Sri Lanka	6.9%

Percentage of the Trincomalee District  
Area under Field Crops (1982)

Paddy	59
Maize	9
Onions	7
Groundnut	6
Manioc	5
Sweet Potatoes	4
Chillies	3
Cowpea	2
Black gram	2
Green gram	1
Finger Millet	1
Soya bean	1
	100
	===

Table 4

Extent of available rainfed lands  
in the Trincomalee District

	(acres)
Lands with immediate potential	99,000
Lands under forests with good soils	177,000
Land with future potential for technical advances	20,000
Lands with low agricultural potential	116,000
Irrigated lands	62,000
Permanent crops	94,000
Total acreage	568,000
	=====



Table 5

Irrigation - Trincomalee District

Number and "command area" of schemes by size class  
('000 acres)

	<u>No.</u>	<u>Acres</u>
200-1500 acres	22	10.8
1500-2500 acres	-	-
2500-3000 acres	1	4.4
5000-10,000 acres	-	-
Over 10,000 acres	3	42.9
Total	26	58.2
Total as a % of the national average	8.3	8.0
	===	===

Nearly 100,000 acres of land in the Trincomalee district has been classified as land with immediate potential for agricultural development (Table 4). Nearly 116,000 acres of land in the district have been classified as land with low agricultural potential. The extent of irrigated lands in the district is around 62,000 acres and is mainly under field crops.

The main field crop cultivated in the area is paddy and account for 59% of the land are under cultivations. Other field crops of importance are Maize (9%), Onions (7%), Groundnut (6%), Manioc (5%), Sweet Potatoes (4%) and chillies (3%).

Over 58,000 acres of land in the Trincomalee district could be classified as 'command areas' of 26 irrigational schemes. Nearly 10,800 acres come under 22 small schemes catering for 200-1500 acres (Table 5).

Three major schemes with a 'command area' of over 10,000 acres irrigate the balance 42,900 acres of land.



## 2.3

Port Development and Shipping

In the past, economic development was mainly concentrated on the southwestern areas of the country and the northeast area, where Trincomalee is located, lagged behind. With the commencement of the Mahaweli Ganga Development Scheme the industrial activities in the area became brisk. Thus, improvement of the Port of Trincomalee, which is adjacent to the development area has become a necessity to enable the smooth flow of various machinery and equipment, raw materials, fertilizer etc. and the general merchandise accompanying the increase in the number of settlers.

In the past, more than 95% of all cargo handled in ports of Sri Lanka was handled by the port of Colombo. The port of Colombo has been improved steadily to keep step with the brisk pace of port activities. However, due to the narrowness of the port area the cargo handling capacity of the port will be restricted in the future and may necessitate the sharing of the port functions with other ports in the island. Judging from the above angle the port authorities believe that it is necessary to improve the facilities of the port of Trincomalee which is blessed with good natural conditions for a port and has varied potential. It is interesting to note that in the last few years there has been a steady increase in the volume of cargo handled by all the ports in the island. This growth is mainly due to the import of wheat for milling, domestic movement of wheat flour and export of wheat bran (Table 6 & 7).

2.3.1 Present status of the port of Trincomalee

The port of Trincomalee is in the inner most part of Trincomalee Bay. It is a good natural port with deep water in Cod Bay, China Bay, Clappenburg Bay and Malay Cove and has relatively calm water conditions. There is a relative lack of flat space behind the port's waterline, but construction of a modern port can be carried out by reclaiming shallow areas of the sea. Roads and railways have been constructed for transportation to the port's hinterland, however, none of these are properly maintained at present. These modes of transportation connect through to the port of Colombo. Thus it is possible to share functions between the ports, or to combine them to make up functions together.

In the port of Trincomalee, port facilities are scattered as shown in Table 8. Most of these facilities are on the west side of the port. In China Bay, the quay and warehouses with a storage capacity of 50,000 tons and belonging to the Trincomalee Tea Administrative (TTA) which exported tea until 1980 are still standing. In Clappenburg Bay there are warehouses for general merchandise with a storage capacity of over thirty two thousand tons (Table 8).



Table 6 Tonnage of Cargo Handled by Main Ports

(Unit: 1,000 tons)

Year	Discharged			Loaded			Total Tonnage Handled		
	Colombo	Trincomalee	Galle	Total	Colombo	Trincomalee	Galle	Total	Total
1978	4,262 (1,979)	76	59	4,397 (2,114)	1,236 (1,050)	47	13	1,296 (1,110)	5,498 (3,029)
1979	3,733 (2,026)	99	46	3,878 (2,171)	1,250 (1,070)	38	17	1,305 (1,125)	4,983 (3,096)
1980	4,265 (2,318)	225	40	4,530 (2,583)	1,447 (1,154)	30	6	1,483 (1,190)	5,712 (3,472)
1981	3,724 (1,813)	528	38	4,290 (2,379)	1,462 (1,145)	195	2	1,659 (1,342)	5,186 (2,958)
1982	4,099 (1,926)	455	15	4,569 (2,396)	1,732 (1,415)	121	-	1,853 (1,536)	5,831 (3,341)
									15
									576
									6,422 (3,932)

Source: Port Statistics, SLPA

Note: ( ) Excluding wet cargo

Table 7 Tonnage of Dry Cargo Handled by Main Commodities

Port of Trincomalee

(Unit: 1,000 tons)

	Discharged				Loaded				Grand Total
	Rice	Flour	Sugar	Others	Tea	Rubber	Coconut	Others	
1978	8	47	-	21	47	-	-	-	123
1979	11	40	16	32	38	-	-	-	137
1980	13	79	28	105	4	-	-	26	255
1981	12	-	36	480	-	-	-	195	723
1982	31	-	-	424	-	-	-	121	576

Source: Port Statistics, SLPA



Table 8 Location of Facilities

NO	FACILITY	DEPTH (feet)	OBJECTIVE VESSEL	MAIN STRUCTURE	REMARKS
1	Town Jetty	10	Passenger Launch	Pier	Custom, Port police
2	Clapenburg Wharf	14	Lighter	Gravity type	Warehouse
3	Constellation Yachts Ltd.			Slip, Pier	Air force land
4	Prima (Ceylon) Ltd.	42	60,000 DWT 1 Berth 5,000 DWT 1 Berth	Detached Pier	Two unloaders, 500 Ton/hour
5	Ceylon Petroleum Corporation	45	No.1 Jetty 35,000 DWT	Gravity type Dolphin	
		45	No.2 Jetty Bunkering		
		45	No.3 Jetty	Pipe Pile Dolphin	Abandoned
6	Ceylon Jetty	10	Lighter		A lot of sunken lighters are observed.
7	TTA Wharf	8	Lighter	Gravity type	Warehouse
8	Burman Jetty			Pier	Repairing is required.
9	Fishery Wharf	20		Gravity type, Slip	Apron is occupied by Colombo Dockyard Ltd.
10	Tokyo Cement Lanka Ltd.	34	12,000 DWT, 8,000 DWT	Pipe Pile Dolphin	Under construction, Target year 1984.8.
11	Mud Cove Jetty	18	SLPA Vessel	Pier	Repairing basin for SLPA vessel



The available pier facilities in the port for large ships belong to the Ceylon Petroleum Corporation and Prima Ceylon Ltd. There are three piers with a 45-foot water depth belonging to the Ceylon Petroleum Corporation on the south side of China Bay, and two piers with a 42-foot water depth (for 60,000 DWT and 5,000 DWT, belonging to the Prima Ceylon Ltd, on the north side of Malay Cove. The Prima plant has a wheat flour production capacity of 600,000 tons annually. In addition, a new pier belonging to the Tokyo Cement Lanka Ltd, (for 12,000 DWT and 8,000 DWT) was completed recently. The cement plant imports clinkers and has an annual production capacity of 200,000 metric tons. The other industrial activities presently located in the Port of Trincomalee include two small shipyards (one belonging to the Colombo Dockyard Co, and the other belongs to a private establishment), a group of 980,000 ton capacity petroleum storage tanks, numbering 98. There are plans by Ceylon Electricity Board to construct a coal fired thermal power plant in the port of Trincomalee.

As these facilities were constructed and arranged in an ad hoc manner, a new development plan based on a long term and integrated utilization concept of the Port of Trincomalee is required, with a view to facilitating future planning processes. In 1983 the Government of Sri Lanka requested the Overseas Coastal Area Development Institute (OCDI) of Japan to carry out a preparatory study on the feasibility of developing the port of Trincomalee. The study was carried out by OCDI with the co-operation of the Japan Transport Consultants Association (JTCA) and a report was submitted in March 1984 (OCDI Report, 1984).

### 2.3.2 OCDI Conducted Preparatory Study on the feasibility of developing the port of Trincomalee.

The OCDI has found the port to have a good water depth and a wide, calm water area, making it a good natural harbour. It has also noted the four public piers (jetties) to be obsolete and has stressed the necessity of improving these and the removal of many sunken vessels. The report also highlights the poor infrastructure facilities such as poor water and electricity supply and the lack of good roads in the port area and in the city. According to the OCDI reports, the selection of industrial locations in the port of Trincomalee has been carried out not from the point of view of an overall comprehensive land use plan but on the necessity and expediency without a full study, and this according to OCDI, has resulted in the current sprawl of industrial establishments in the port area.

The OCDI report has identified the following development possibilities laying emphasis on the Port of Trincomalee;

1. A distribution port connecting agricultural production areas, including those in the Mahaweli Ganga Development Scheme with the nation's main cities.



The Chief cargoes would include rice, fertilizer, general merchandise, construction materials and machinery.

- 2 A port for the transshipment of containers, the export of primary agricultural products (tea, rubber and coconut products) and the import of general miscellaneous goods.
- 3 Development of water front industries utilizing large ships. These industries include petrochemicals, food, wood products, shipbuilding and repair, power generation.
- 4 Development of the port town as a nucleus for Trincomalee district.
- 5 A marine product processing base and fishery development base including fishing boat repair facilities.
- 6 Tourism development laying emphasis on seashore resorts and leisure, and development as a port of call for international passenger liners.

The report also emphasises the necessity to establish a master plan for the improvement and development of the Port of Trincomalee, which is integrated with the urban development plan and the regional development plan for the area. In addition to the master plan, a short-term plan is suggested for these items which need urgent attention. The report also recommends carrying out of a feasibility study for the short-term plan. The draft terms of Reference for the formulation of the master plan and the feasibility study for the short-term plan are given below :

#### A. Objectives

- 1 To prepare a master plan for the development of the port, based on the forecast for the development of its hinterland, its social and economic aspects and the correlation to other main ports.
- 2 To prepare a short term development plan for the port, including a feasibility study.

#### B. Scope of Work

In order to achieve the objectives mentioned above, the report recommends that the study should cover the following areas :

- 1 To study the proper role of the port, based on the projections of both social and economic development in its hinterland and also its,



functions and relation to other main ports.

- 2 To formulate the basic conception of the development of the port.
- 3 To forecast the future sea and land traffic demand through the port for the year 2000.
- 4 To make land use plan of Trincomalee city including port area.
- 5 To make a basic layout plan of major port facilities.
- 6 To make a basic layout plan of the relevant infrastructure, such as access roads.
- 7 To make a rough cost estimation for the plan.

## 2. Short term Development Plan

According to the report the port's short term development plan for the period up to 1990, including its feasibility study, should be prepared based on the master plan above on following guide lines :

- 1 To forecast a traffic demand by sea and land through the port up to the year 1990.
- 2 To define the development plan.
- 3 To make a preliminary design of the port facilities.
- 4 To make a rough cost estimation and implementation programme.
- 5 To study economic and financial analysis of the short-term plan.
- 6 To consider an environmental assessment.
- 7 To make recommendation for a sound financing policy for the port in the future, if necessary.
- 8 To make recommendations on the port management system.



## 2.4

Marine Resources

Geographically Trincomalee coastal zone extends from Maduru Oya at Kalkudah on the east coast, up to and including the Jaffna peninsula in the north. However, the coast of the Trincomalee district is little over half the entire length of the Trincomalee coastal zone. The most unique feature of the coastal zone of the District is the presence of a steep submarine valley, notched in the continental shelf off the Bay area. The Canyon, one of the steepest known, is recorded

to have an average slope of over 40° (Anon, 1985).

A special feature to be considered in respect of the productivity of the water, which in turn influences the resource potential of the area, is the special bathymetric conditions in the Koddiiyar Bay area. The narrowness of the continental shelf, the presence of a deep canyon and the accessibility to ocean currents should theoretically facilitate the process of upwelling in the Bay area. Another important factor which could influence the hydrobiology of the marine environment in the Trincomalee area is the macro-changes in the fresh water regime at the river outlets due to damming of River Mahaweli, upstream. This could also bring about salinity transformations in coastal soils and could also lead to changes in the sedimentation pattern. The marine resources of the Trincomalee district are varied and includes both living and non-living resources. Beach sand minerals such as ilmenite, rutile, zircon, garnet and monazite occur in high concentrations at a number of points along the coast. Legalised mining for ilmenite, rutile and zircon is carried out at Pulmoddai on the more northern part of the coast by the State Mineral Sands Corporation (SMSC). The deposits at Pulmoddai have been estimated at over 4 million tons. The State Mineral Sands Corporation has been reported to process about 200,000 cubic yards of sea sand annually in a 3 mile stretch of offshore and backshore areas, with an average width of 200 ft, for the purpose of extracting the minerals. The total quantity of ilmenite mined by SMSC in 1973 was estimated at 93,482 metric tons. In 1976 only 55,810 metric tons were mined, recording a drop of about 40% on the 1973 output. The sand which contains about 70% ilmenite is shipped to Japan from the site. Other minerals such as zircon and rutile are further extracted in a plant at China Bay near the Trincomalee harbour (Fernando et al, 1982).

The marked exceptions to the very smooth shoreline of the Trincomalee district are the Koddiiyar Bay at Trincomalee, with its unique bathymetry, and a number of indentations in the beach, forming lagoons. The two most important of these lagoons are 'Kokilai' near Pulmoddai and 'Nayaru' north of Pulmoddai. These two lagoons are very important fishing grounds and provide a livelihood for several hundred fishermen, both migrant and local.



Other lagoons and Estuaries of the coast include those at Kuchchaveli, Periyakarachchi, Sinnakarachchi, Uppaveli, Wakantai, Ullakkalie and Uppur. The coast north of Trincomalee has been shown to have a number of coral reefs that run from the shore, sloping towards the sea bottom.

#### 2.4.1 Coral Ecology

The linear extent of the coral reef at Foul Point and Coral Point have been estimated at 6 km and 2 km respectively. The reefs at Pigeon Island and Sinnakarachchiya in the Nilawali area have been shown to be around 2-3 km and 1-2 km in extent, respectively. The coral reef at Pigeon Island shows a diverse faunal-floral assemblage. The fringing reef along the northern shore of the island is reported to consist of Acropora/Pocillopora verrucosa assemblage. Along the west an assemblage of Echinopora lamellasa and digitate Acropora sp. has been reported while on the south a ramose Acropora sp. has been noted. (Anon, 1986). Waters off these reefs abound with under-water life and thus have made these locations popular with the tourists. Trincomalee is also regarded as a spear-fishermen's paradise. Varieties often hunted include Trevally, Seer, Queen fish, Marlin, Barracuda etc. However, uncontrolled spearfishing could lead to depletion and decimation of the resident species of the reefs such as Grouper and Reef-Cod. Coral reefs and their resident populations of fish are often irreparably damaged by dynamite fishing, a practise common in certain areas of Trincomalee. This method of fishing causes great damage to the reef and also kills the fish due to positive pressure shock waves and accompanying rare-factions created as a result of the explosion. A study carried out by the National Aquatic Resources Agency on the practise of dynamite fishing in Trincomalee revealed the highly organized nature of the operation, "Mudalalis" often employing people for fishing. The fish is mostly used in the production of dry fish. Under section 14 of the Fisheries Ordinance, killing of fish using explosives or poisonous or stupefying substances is prohibited. However, in the past, culprits have got away with very low fines due to certain loopholes in the legislation. On a recommendation made by NARA, Ministry of Fisheries, has amended the Fisheries Ordinance enabling the imposition of heavy fines on those found guilty of dynamite fishing.

The Trincomalee coast is an important source of the sea weed Gracilaria which is exported to Japan in the unprocessed form. It is estimated that about 250 tons of G.verucosa could be collected from the east coast (Durairatnam, 1961 & 1965; Gunasekara, C., 1963).

#### 2.4.2 Mussel and Oyster Production

Traditionally Thambalagam Bay and Kokilai lagoons have been good oyster grounds and have sustained important oyster fisheries (Pearson, 1913).



The 'Window Pane' oyster fishery at Tambalagam Bay has yielded over 4 million oysters in 1954. The value of the 'Window Pane' oyster (*Placuna placenta*) fishery in 1955 was estimated at Rs. 35,000/-. However, the fisheries which existed at Thambalagam and Kokilai were totally destroyed during 1957/1958 period, due to heavy floods. Over exploitation too may have contributed to the decimation of the oyster population. In the Clappenburg and Inner Harbour area the naturally occurring species is the Pearl Oyster (*Pinctata margaritifera*). Two species of mussel, namely Green Mussel (*Perna viridis*) and Horse Mussel are naturally found in the Clappenburg and Inner harbour areas.

The National Aquatic Resources Agency is presently engaged in studies in the Bay area with the view to evaluating the feasibility of mollusc culture in the area. The techniques being studied are Raft Culture, Stake Culture and Stick Culture of molluscs. The Hydrobiological studies have revealed the area to have a tidal range of around 80 cm and the productivity of the water body to be medium, nevertheless, adequate for mollusc culture (Indrasena, 1986; Indrasena & Wanninayake, 1986).

Studies carried by the National Aquatic Resources Agency have revealed that certain areas of the Trincomalee Bay and some of the lagoons and estuaries along the coast of the Trincomalee district to have conditions suitable for mollusc culture. The mollusc, especially the mussels, have a very high growth rate and achieves a remarkable size in less than 1 year. Unlike in the case of fish culture, there is no supplementary feeding needed in the case of mussel culture. Hence, mussel culture could provide an extra income and a nutritious protein supplement for the local population. Being a speciality food it can also fetch a very high price among the tourists.

The areas being studied for raft culture of mussel are Clappenburg Bay, Snug Cove, Orlando Cove, Railway Cove, Nicholson Cove and Thambalagam Bay. Sites being used for Stake Culture are Mangrove Island, Yard Cove and Mandathivu Island. Recently a Japanese firm established a facility for the culture of 'Pearl Oyster' at French Pass.

#### 2.4.3 Fish Production

In 1983, Marine fish production in the Trincomalee district was around 13,500 metric tons and accounted for nearly 7.3% of the total marine fish landed (Anon, 1983). Thus in 1983 Trincomalee ranked 4th in fish production below Jaffna, Puttalam and Mannar districts (Table 9). The main fish varieties landed in the district are Shore Seine varieties of small pelagic fishes (3770 tons) and Rock fish (2456 tons). The other important varieties landed include Skipjack (1816 tons), Shark (1243 tons), Caranx (1217 tons) and Yellow Fin Tuna (931 tons). Major fishing season in Trincomalee is the January-April period. Heavy fish landings are also noted in September-October period as well (Table 10). Most of the fish landed is sold in the fresh form and in 1983 only 461 tons of dry fish was produced in the district. This consisted mainly of Shore Seine varieties of fish (Table 9).



Table 18

Table 9 Wet fish and Dry fish Production in the Trincomalee District (1983)

Monthly Fish Production in the Trincomalee District (1983)			
	Wet fish (Tons)	Dry fish (Tons)	
January	1290	1818	Seer
February	1103	931	Paraw
March	1128	525	Bajaya
April	2463	1283	Kelawala
May	743		Other blood fishes
June	946	779	Shark
July	897	2458	Skate
August	658	3769	Rock fish
September	1077	61	Shore seine varieties
October	1734	17	Lobster
November	765	44	Prawn
December	702		Others
Total	13,506	13,886	



Table 10

Wet fish and Dry fish Production in the  
Trincomalee District (1983)

	<u>Wet fish (Tons)</u>	<u>Dry fish (Tons)</u>
Seer	663	16
Paraw	1217	12
Balaya	1816	
Kelawalaa	931	
Other blood fishes	525	
Shark	1283	
Skate	779	
Rock fish	2456	
Shore seine varieties	3769	
Lobster	01	
Prawn	17	
Others	44	
	<hr/>	<hr/>
	13,506	461



Table 11

Fisheries Data for the  
Trincomalee District (1982)

Number of active fishermen	4190
Number of crafts	
Non-mechanised	1061
mechanised	533
Coastal fish production	14,100 tons

The district has over 4,000 men engaged in fisheries, mostly in the marine sector. Most of the crafts operating in the area are non-mechanised boats and are engaged mainly in beach seining operations (Table II). Only 33% of the total of 1594 crafts which operated in 1982 were mechanised.

#### 2.4.4 Trincomalee and its Whale Population

Waters off Trincomalee sustain a large population of whales, mainly blue whales and sperm whales. The area also has a very large population of dolphins. The variety and the diversity of marine mammals sighted by some distinguished environmentalists and scientists has made them list Trincomalee as the "Whale Capital" of the world. One of the issues of "Sri Lanka Today" reports that on the 23rd of February 1983, during a four hour tour, a group of whale watchers have encountered 16 blue whales, one each of Sperm and Bryde's whales and over 125 dolphins.

With the assistance of the United Nations Environment Programme (UNEP) the National Aquatic Resources Agency set up a facility known as the 'Centre for Research on the Indian Ocean Marine Mammals (CRIOMM) in 1983, to carry out studies on marine mammals of the Indian Ocean, numbering over 25 species. The world's first under water film on sperm whale with a footage of a whale calf being born, "Whales Weep Not", was filmed off Trincomalee in 1983.



2.5

### Industry and Investment

Main areas of capital investment in the Trincomalee District are a) Tourism and Recreation b) Port Facilities and Services c) Fisheries d) Agriculture and e) Projects with Foreign Investment.

#### a) Tourism and Recreation :

Over the last few years the tourist industry has grown in leaps and bounds in the eastern and northeastern Sri Lanka, especially north of Trincomalee. The presence of sites with archaeological interest, wildlife sanctuaries, facilities suitable for whale watching etc. in the area has helped the growth of the industry. Facilities also exist in the area for water sports activities such as water skiing, wind surfing, angling, snorkling, under water photography and study of ship wrecks. Investment in the area mainly comes from the private sector. However, due to the prevailing terrorist activities there has been a temporary setback in the growth of the industry.

#### b) Port Facilities and Services :

The Port has several piers which could be used by ships upto 60,000 DWT. It has also slipway and extensive warehouse facilities, especially on the west side of the Port. There have also been several proposals for setting up facilities for Tanker Hull Cleaning and Ship Breaking in the waters off Trincomalee.

#### c) Fisheries :

Infrastructure facilities such as ice plants, cold rooms, freezer facilities etc, belongs mainly to the public sector. Large quantities of cuttle fish and squid are processed in the area for export purposes. Other fisheries related activities include the collection of ornamental fish for export, production of dried shark fins and shark liver oil for export. Large quantities of the liver oil of 'Spiny Shark' is also produced in the area for export to Japan where it is used in the extraction of 'Squalene'. Large quantities of the sea weed Gracilaria verucosa is also harvested from the area for export purposes. The extraction of sea shells and corals is another major activity in the area. There is also a potential for developing pearl oyster culture, and mussel culture in certain lagoon areas on a commercial scale. A Japanese firm has already commenced the culture of pearl oyster on a commercial scale at Trincomalee.



## Tourism

### d) Agriculture :

Main industries in the Agricultural sector include production of sugar and alchohol. Other activities gaining popularity in the area include the production of milk, tobacco and animal husbandry.

### e) Projects with Foreign Investment :

These include the two major manufacturing industries in the area, namely, Mitsui Cement Co, and Prima Ltd,. In addition to these a Japanese company has commenced pearl oyster culture at Trincomalee.

The State Mineral Sands Corporation is engaged in the mining of beach sand for Ilmenite, Rutile and Zircon in Pulmoddai area north of Trincomalee. The factory has its by-products plant at China Bay.



## 2.6

Tourism

The tourism development plan of 1967 has identified the areas Marble Bay, Sweat Bay and Deadman's Cove for recreational and tourism development (Figure 3). At the present time areas that have been developed are on the northern side of Trincomalee in Nilaveli. There is considerable potential for the development of inner bay areas for tourism and recreation, which can be carried out on an integrated approach together with other forms of development. The ideal concept for tourism development in the inner bay areas would be the cottage type accommodation facilities within the high elevations of the bays with other supporting facilities. Development areas should also have 'buffer zones' and all development should preferably be of a scattered low density type. These areas will have the natural advantage of calm seas which are ideally suited for special interest recreational activities such as water-skiing, angling, boating, wind-gliding etc.

Some of the concepts in the plan of 1967, such as the golf course, botanical park and areas for picnic tours etc. could be adopted in the new integrated development proposal as well.

The potential for Trincomalee to develop into a major resort center is indicated by many factors, including the following :

- \* The area has over a dozen beautiful bays, with white sand beaches and ideal swimming conditions.
- \* The climate in the summer months is warm and relatively dry, ideal for a beach resort. During the northeast monsoon season, the area averages 14 inches of rain per month, during November and December, but even during these months approximately 50% of the days are rainless.
- \* Trincomalee is a very large, natural deep water harbour, and the bays and waters of the harbour are well protected.
- \* Trincomalee town is served by a highway, railroad and air service from Colombo, and the driving distance to the three ancient cities is only one-half the distance to those cities from Colombo.
- \* A short distance upstream from the mouth of the Mahaweli Ganga, which flows into Trincomalee harbour, is a game sanctuary where wild animals in their native habitat can be viewed from a boat.



- \* Outside the harbour, along the coasts north and south there are spectacularly beautiful white-sand beaches, as fine as any in tropical and subtropical regions of the world. They have excellent swimming conditions and the closer bays would be ideal for picnic and boat trips from Trincomalee.
- \* Trincomalee is also now becoming increasingly popular world over as a location for whale watching.
- \* There is a large amount of unused land owned by the Government.

It is widely believed that it is desirable to avoid over centralizing tourist facilities and operations in and around Colombo. A strong tendency exists, in developing countries, to centralize all such activities in capital cities. This usually causes severe social and urban problems and limits economic advancement in other areas. In order to develop a "total tourist plan" that utilizes all Sri Lanka's assets to the best, it is mandatory that the east coast, with its magnificent shoreline and good climate, be fully utilised.

Because of the distances and lack of urban development on the east coast, it is proposed that the major step into tourist operations be a large, comprehensive resort complex at Trincomalee. This is projected to be justifiable by 1976, on the basis of Ceylon Tourism Plan Projections, in terms of cost; time required for build-up of tourism, planning, design and organization of the project; financing and construction.

The Trincomalee Regional Plan, (Fig 3), indicates an area of approximately 500 acres, which is proposed for detailed study for resort planning and development as the major resort center. Other sites are also suggested, including two beautiful small beaches south of Trincomalee town. The shoreline south of Foul Point is also very attractive, though less accessible. It is possible that small beach hotels could be put into operation at these or other sites on the east coast before the Trincomalee Resort Complex is developed, and they would benefit greatly from the increased activity that the Complex would create.

The Trincomalee Resort Centre Development Plan (Fig. 4) shows a total of approximately 1,750 hotel rooms located in seven hotels of various types at three bays, Deadman's Cove, Sweat Bay and Marble Bay. It is proposed that Clappenburg Bay be used for sailboat and fishing boat marinas. An 18-hole golf course is sited inland adjacent to Sweat Bay, with three holes extending onto a rocky point at the water's edge. Within the golf course, and situated on knolls, are a series of cluster residential developments. These can be permanent homes for retired families, vacation cottages, or golfers' cottages operated by the hotels.



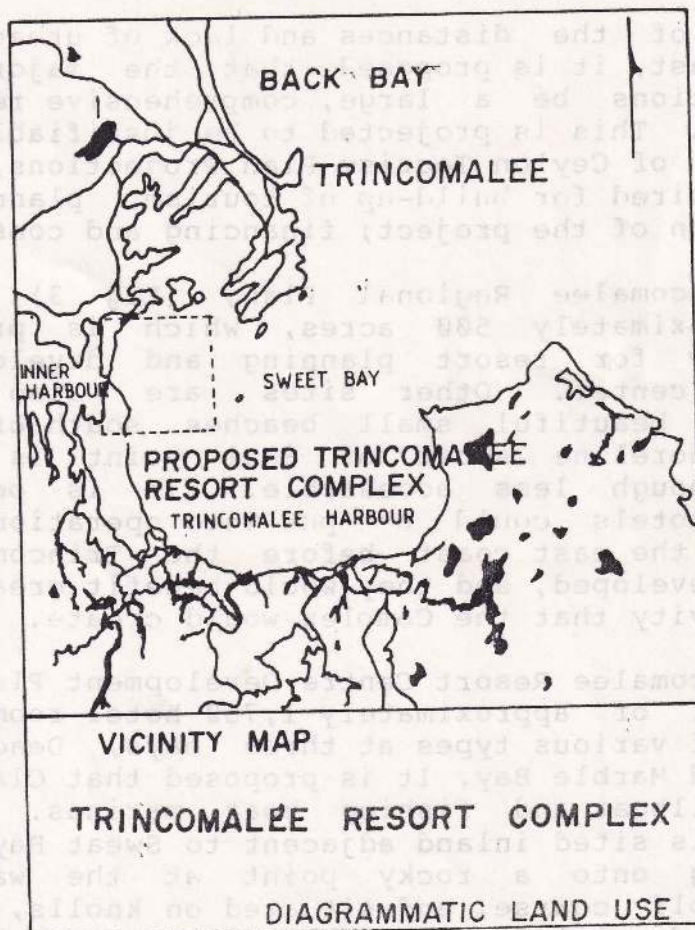
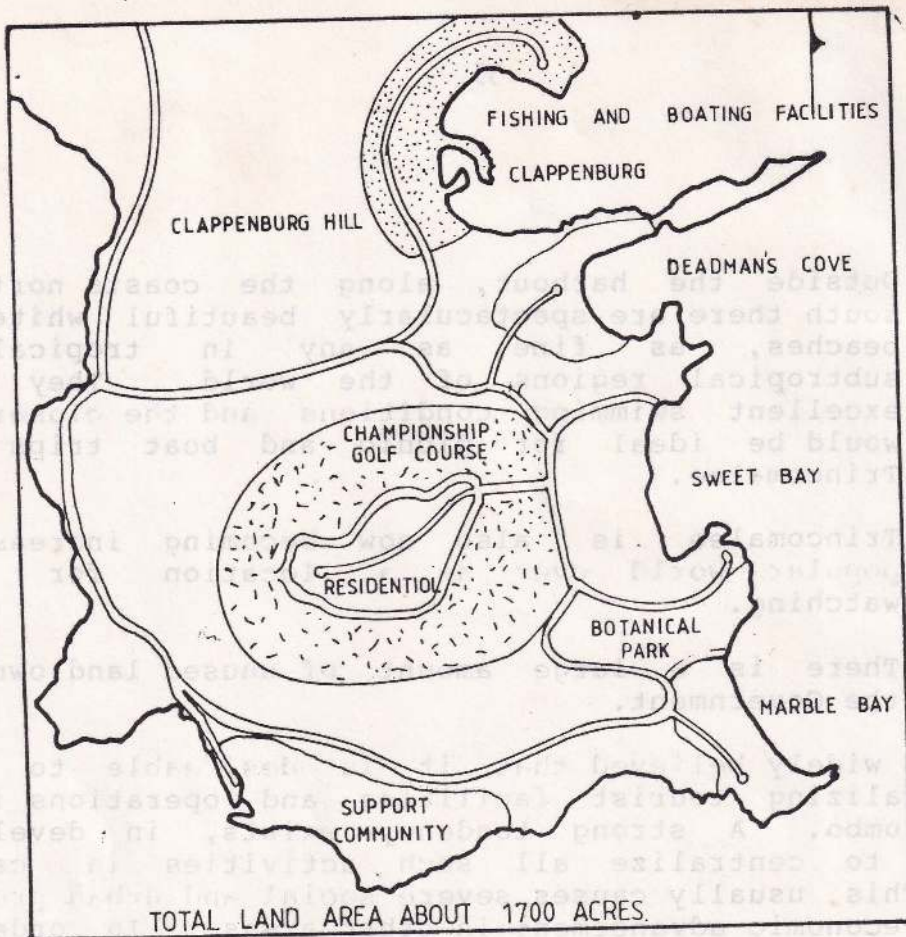


FIGURE 3  
TRINCOMALEE REGIONAL TOURIST DEVELOPMENT PLAN



A botanical park is planned as an important feature, and this would be a low elevation park with accent on tropical flora, as differentiated from the higher elevation botanical gardens of Kandy and Nuwara Eliya.

A support community is proposed to house employees and their families. This village could grow up to 10,000 to 15,000 persons and would be an expansion of an existing small village.

Subsidiary areas for picnic tours, beach parties or even overnight accommodations or special entertainment are proposed for Shell beach or beaches south of Foul Point. These would be used for boating excursions from Clappenburg Bay.

Initial planning of the Trincomalee tourist development should be co-ordinated with studies of other kinds of industrial, commercial and agricultural activity that might be considered for concurrent growth in Trincomalee. To develop tourism in the area it is important to furnish some extension to the existing facilities in Trincomalee so that visitors may become oriented towards this resort region. Major new water supply and other services are required for any large scale growth can occur.

#### 2.6.1 Archaeology

According to historians, Trincomalee has been an international sea-port since the 6th Century B.C. The discovery of several pre-Christian inscriptions and a large number of ancient sites with remains of buildings from the Trincomalee Fort area, bear witness to the fact that the area around the port and the city had been colonised as early as the 3rd century B.C. and possibly in the 5th Century B.C.

A large number of items of archaeological interest, discovered from various sites of excavation in the district are exhibited in the Trincomalee Museum and at some of the temples in the area.

The district of Trincomalee also has a large number of sites of historic value, eg. Seruwila, Galmetiyawa, Tiriyaya, Eramaduwa, Periyakulam (Velgam, Vehera), Atabendiwewa, Gantalawa (Sri Agbo Raja Maha Vihara), Pankulama (Sri Gajaba Vihara) etc. (vide appendix 1).

#### 2.6.2 Sri Lanka Maritime Museum

Trincomalee has been ear-marked, as the best location to set up the proposed "Sri Lanka Maritime Museum" by virtue of its known potential for studies on maritime history and



nautical archaeology. The National Aquatic Resources Agency and the Department of the National Museum will collaborate with the Department of Archaeology, the Department of National Archives and the Post-graduate Institute of Archaeology in setting up the Maritime Museum. As an initial step towards the setting up of the Museum, the collection of traditional fishing craft, either originals or models, is being carried out by the Department of the National Museums while NARA is engaged in the preparation of national inventory of ship wrecks off the coast of Sri Lanka. Material brought to light from the sea bed will be subjected to chemical preservation where necessary, by specialists trained at the Laboratories of the Sri Lanka UNESCO project of the Cultural Triangle. The proposed museum and its affiliated Nautical Archaeological Research Centre (NARC) is expected to curate artifacts such as coins, ceramics, maps and marine charts, cannons etc.

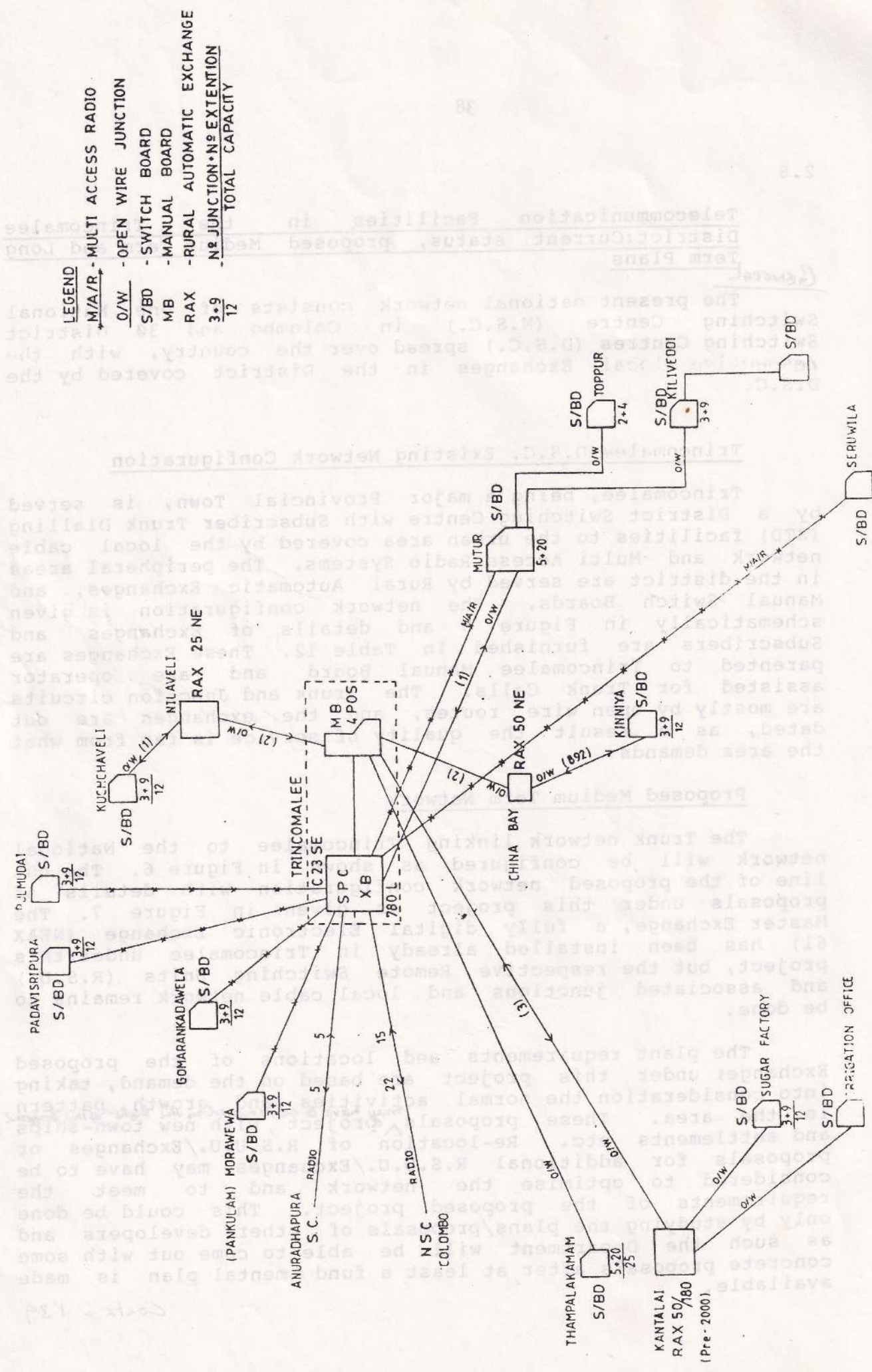
## 2.7 Energy

The total hydro-electric potential of Sri Lanka is estimated to be about 1,600 MW. About one-quarter of this has already been developed and projects underway, mainly the Accelerated Mahaweli Scheme is expected to top over half of the potential by the end of the decade. The increase supply is mainly aimed at cushioning the heavy demand by the commercial and industrial sectors. Considering the projected industrial growth in the Trincomalee district a heavy increase in the demand for electricity could be expected in the area in the future. Furthermore, an increase in the demand for electricity could also be expected in the domestic sector as a result of the new settlements appearing in the hinterland areas. In the town area only 40.8% of the residential units (ie. about 3,250 units) enjoy electricity and with the development of the town an increase in the demand for energy could be expected.

In the recent past, Trincomalee has attracted the attention as a potential power producer area in some circles. The Ocean Thermal Energy Commission (OTEC) potential in the Trincomalee area is considerable. The thermal gradient of the deep canyon at Trincomalee has been considered as a potential site for this purpose. However, area intensive utilization of the thermal gradient arouse questions of environmental limits. Plant operations involve vertical displacement of massive quantities of water from depths and this could have harmful effects on the ecology. The operation may also involve the use of various chemicals, especially for cleansing purposes and to prevent bio fouling of the heat exchangers, with considerable damage to the marine environment. Recently there has been a proposal to locate a Coal Fired Power Generation Unit in the Trincomalee Bay Area. The proposal, has attracted the attention of many, including ecologists and scientists, due to its possible adverse environmental implications, especially, the disastrous effect on the marine environment of the Bay Area.



**FIGURE 5** EXISTING NETWORK CONFIGURATION OF TRINCOMALEE DSC AREA





2.8

## Telecommunication Facilities in the Trincomalee District: Current status, proposed Medium Term and Long Term Plans

General

The present national network consists of one National Switching Centre (N.S.C.) in Colombo and 30 District Switching Centres (D.S.C.) spread over the country, with the respective local Exchanges in the District covered by the D.S.C.

### Trincomalee D.S.C. Existing Network Configuration

Trincomalee, being a major Provincial Town, is served by a District Switching Centre with Subscriber Trunk Dialling (STD) facilities to the urban area covered by the local cable network and Multi Access Radio Systems. The peripheral areas in the district are served by Rural Automatic Exchanges, and Manual Switch Boards. The network configuration is given schematically in Figure 5 and details of Exchanges and Subscribers are furnished in Table 12. These Exchanges are parented to Trincomalee Manual Board and are operator assisted for Trunk Calls. The Trunk and Junction circuits are mostly by open wire routes, and the exchanges are outdated, as a result the quality of service is far from what the area demands.

### Proposed Medium Term Network

The Trunk network linking Trincomalee to the National network will be configured as shown in Figure 6. The outline of the proposed network configuration with details of proposals under this project is given in Figure 7. The Master Exchange, a fully digital Electronic Exchange (NEAX 61) has been installed already in Trincomalee under this project, but the respective Remote Switching Units (R.S.U.) and associated junctions and local cable network remains to be done.

The plant requirements and locations of the proposed Exchanges under this project are based on the demand, taking into consideration the normal activities and growth pattern in the area. These proposals <sup>may have to be reviewed in the light of the proposed major developments</sup> project, with new town-ships and settlements etc. Re-location of R.S.U./Exchanges or proposals for additional R.S.U./Exchanges may have to be considered to optimise the network and to meet the requirements of the proposed project. This could be done only by studying the plans/proposals of other developers and as such the Department will be able to come out with some concrete proposals after, at least, a fundamental plan is made available.

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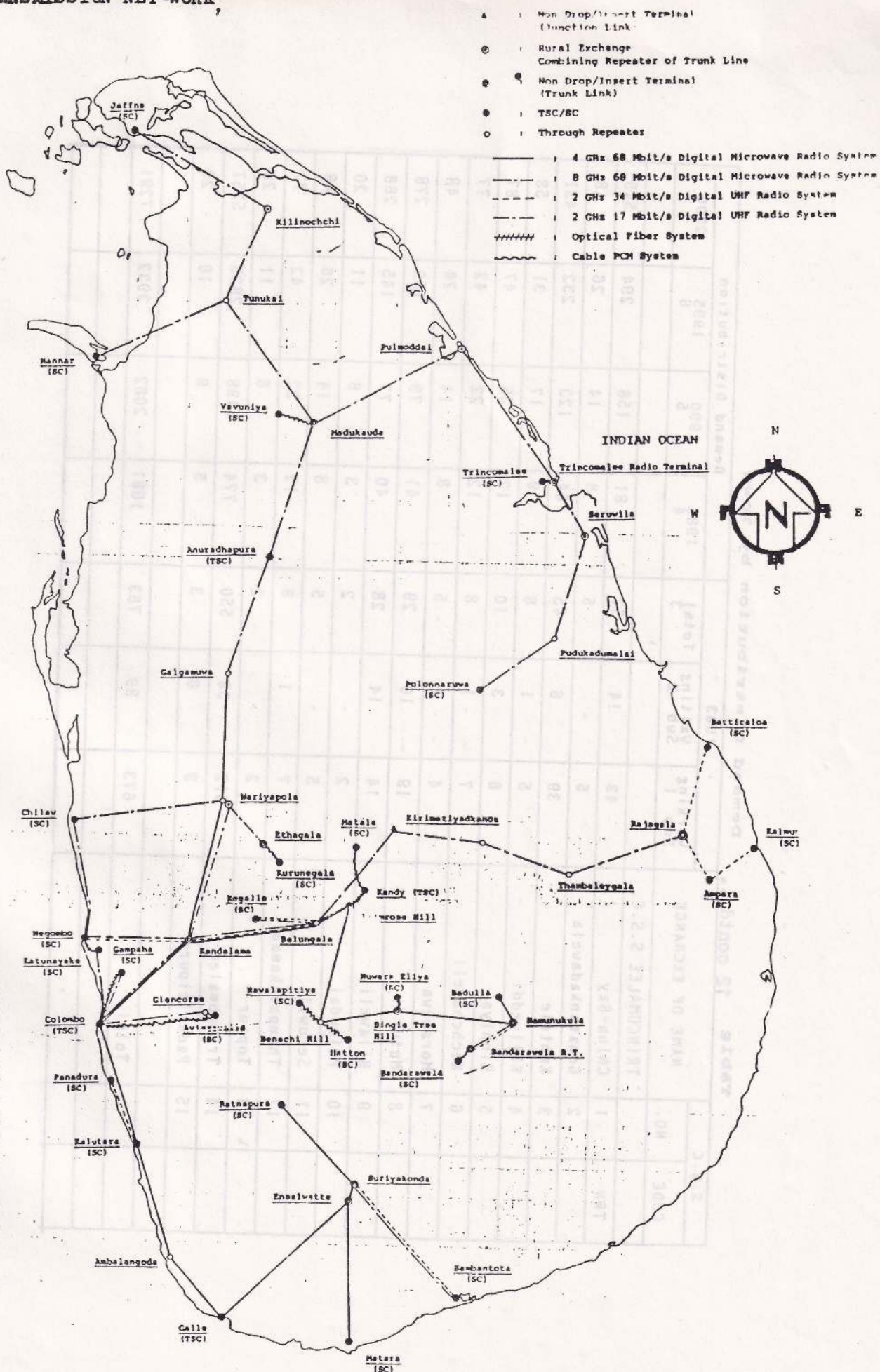
TABLE 12

## TRINCOMALEE DISTRICT / SWITCHING CENTRE

JUNCTIONS	TRUNKS		NAME OF EXCHANGE	TYPE OF EXCHANGE	CAPACITY	NO OF WORKING LINES	REGISTERED WAITERS	MEDIUM TERM PROJECTS FOR DEVELOPMENT
	NO FROM	TO						
OPEN WIRE ROUTE	3	TRINCO	CHINA BAY	RURAL AUTOMATIC EXCHANGE	50 LINE	38	5	REMOTE SWITCHING UNIT PCM CABLE JUNCTION
MULTI ACCESS RADIO	1	TRINCO	GOMARANKADAWELA	MANUAL SWITCH BOARD	$\frac{3+9}{12}$	4	0	LOCAL NETWORK OF MORAWEWA R.S.U.
OPEN WIRE ROUTE	2	TRINCO	KANTALE	RURAL AUTOMATIC EXCHANGE	50 LINE	34	12	REMOTE SWITCHING UNIT RADIO JUNCTION
OPEN WIRE ROUTE	1	MUTTUR	KILIVEDDI	MANUAL SWITCH BOARD	$\frac{3+9}{12}$	4	0	- DO -
MULTI ACCESS RADIO	1	NILAWELI	KINNIYA	MANUAL SWITCH BOARD	$\frac{3+9}{12}$	7	8	LOCAL NETWORK OF CHINA BAY R.S.U.
OPEN WIRE ROUTE	1	TRINCO	KUCHCHAVELI	MANUAL SWITCH BOARD	$\frac{3+9}{12}$	5	2	R.S.U. RADIO JUNCTION
MULTI ACCESS	1	TRINCO	MORAWEWA	MANUAL SWITCH BOARD	$\frac{3+9}{12}$	7	NIL	R.S.U. P.C.M JUNCTION
OPEN WIRE ROUTE	2	TRINCO	MUTUR	MANUAL SWITCH BOARD	$\frac{5+20}{25}$	19	6	R.S.U. RADIO JUNCTION
OPEN WIRE ROUTE	2	TRINCO	NILAWELI	RURAL AUTOMATIC EXCHANGE	25 LINE	14	3	R.S.U. PCM CABLE JUNCTION
MULTI ACCESS RADIO	1	TRINCO	PULMUDAI	MANUAL SWITCH BOARD	$\frac{3+9}{12}$	2	1	R.S.U. RADIO JUNCTION
MULTI ACCESS RADIO	1	TRINCO	SERUWILA	MANUAL SWITCH BOARD	$\frac{2+4}{6}$	2	NIL	R.S.U. RADIO JUNCTION
OPEN WIRE ROUTE	1	TRINCO	THAMPALAKAM	MANUAL SWITCH BOARD	$\frac{5+20}{25}$	7	NIL	R.S.U. PCM CABLE JUNCTION
OPEN WIRE ROUTE	1	MUTTUR	TOPPUR	MANUAL SWITCH BOARD	$\frac{5+20}{25}$	3	NIL	LOCAL NETWORK FOR SERUWILA R.S.U.
OPEN WIRE ROUTE	32	COLOMBO	TRINCOMALEE	C 23 SE.	1000	510	60	NEAX 61 FULL A: HOT EXCHANGE
MULTI ACCESS RADIO	1	TRINCO	PALAVERIPURA	MANUAL SWITCH BOARD	$\frac{3+9}{12}$	3	NIL	NO PROPOSAL



REFERENCES









### Proposals Under Master Plan

The Department has prepared a Master Plan to meet the following objectives by the year 2000.

- 1 Fulfilment of 100% telephone demand.
- 2 Achievement of 100% digitalization of the network.
- 3 Introduction of New Technology and Services.
- 4 Elimination of service imbalances between the Urban/Rural areas.

Extracts of the proposals pertaining to the above in respect of Trincomalee district are given in the Table 13 and Figure 8.

These proposals are based on projected requirements worked out using socio-economic pointers for normal development. However, in view of these major integrated development projects, these plans too will have to be revised to meet initial and ultimate demand. In doing so, we may have to give due consideration for introduction of new Technology and also make sufficient provision for other information services that may have to be catered for. All these could be worked out only when the final plan of this Development Project is ready.

### Cost of Installation and Financial Provision for Development

The average cost per line is approximately 3,000 to 4,000 U.S Dollars, depending on the size and spread of the network. In view of the prevailing financial constraints it has not been possible to raise funds to implement development proposals. It is therefore, essential that support services necessary are integrated in the planning stage of the sectoral projects and funds are obtained to meet the overall requirements of the project.



# TRINCOMALEE DSC AREA. DEVELOPMENT OF RURAL TELECOMMUNICATIONS. PROPOSED PROJECT

FIGURE 7

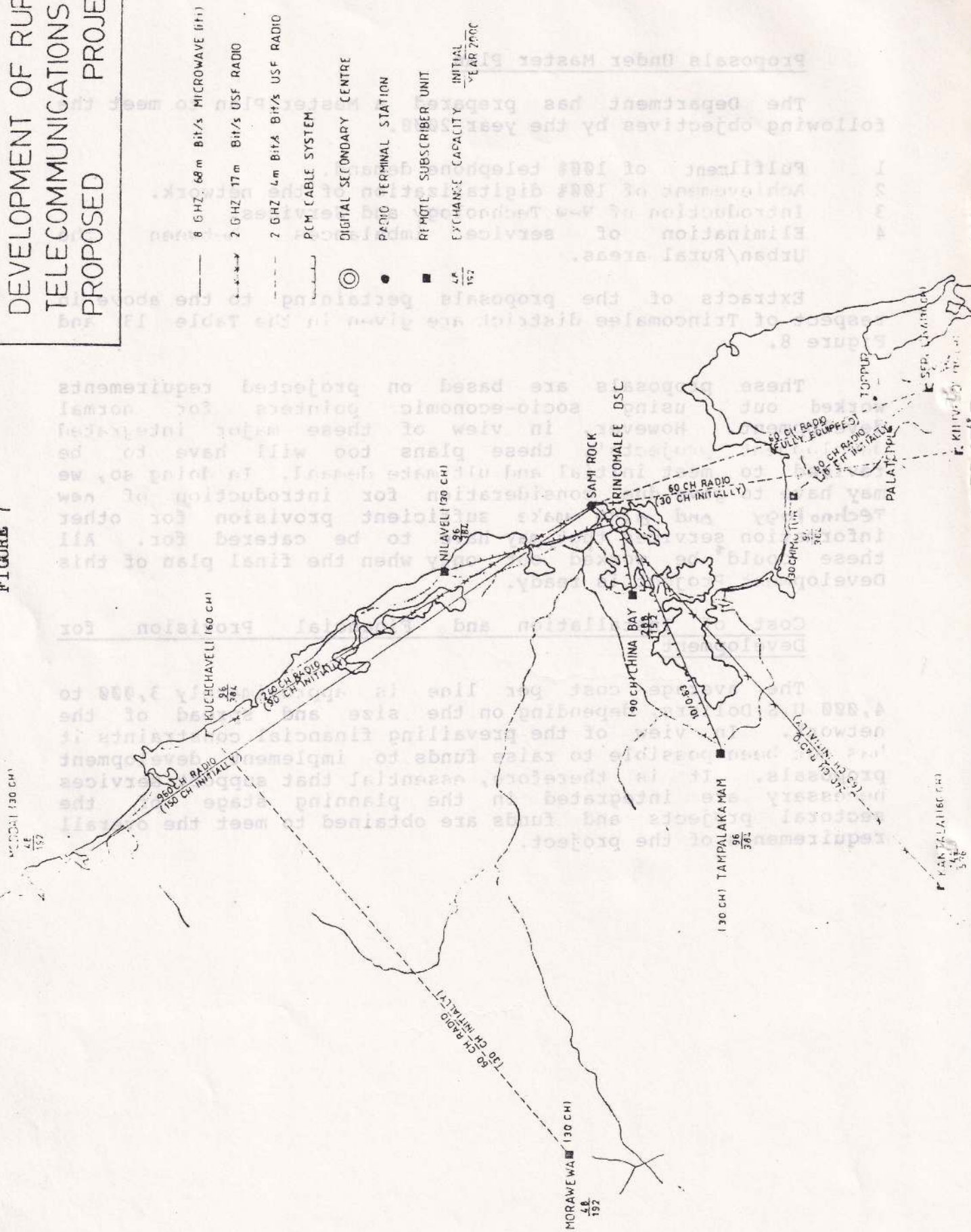




Table 13

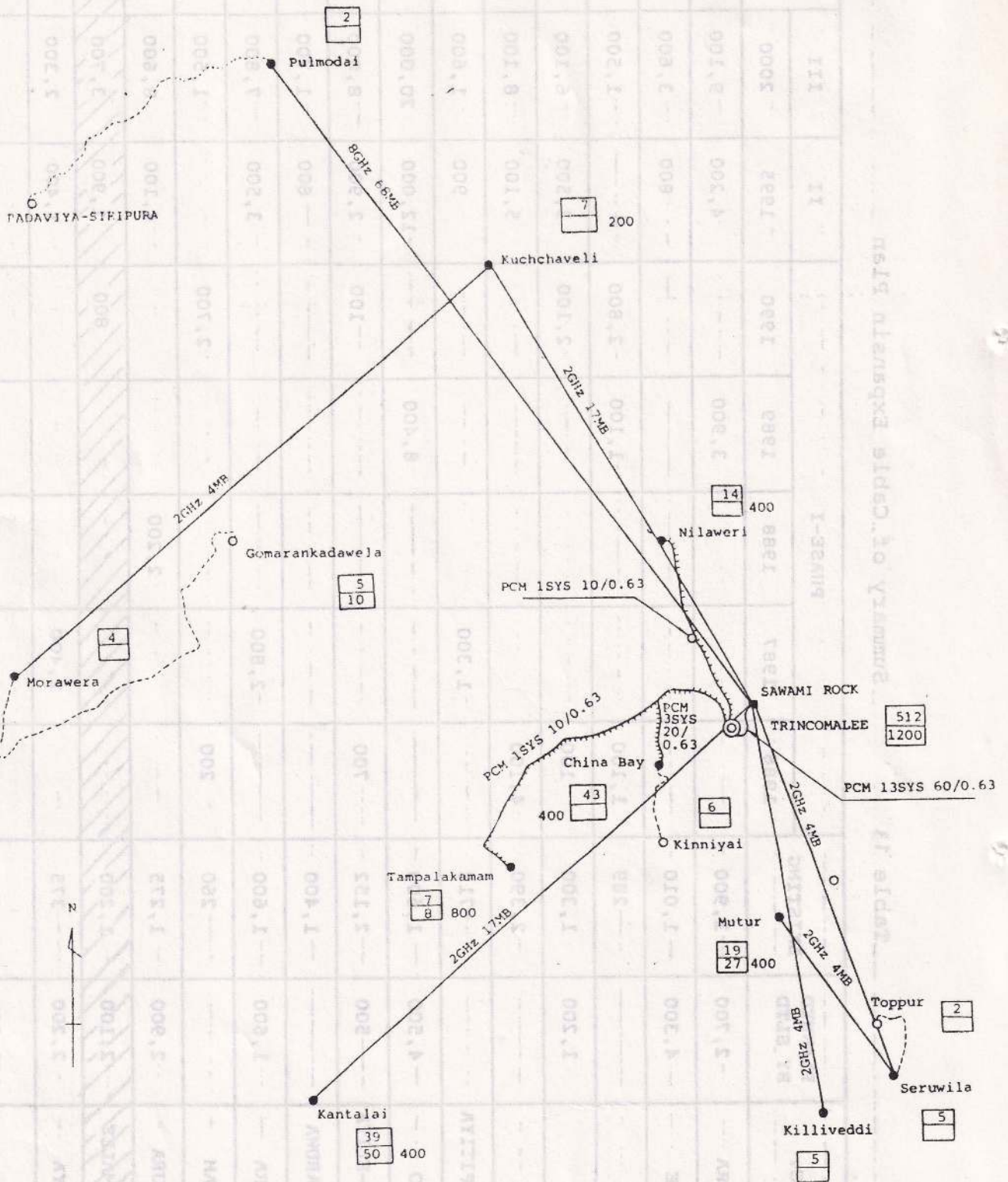
## Summary of Cable Expansion Plan

S.S.C.	PLANNED BY SLTD	EXISTING	PHASE-I					II		III		TOTAL
			1986	1987	1988	1989	1990	1995	2000			
KULUTARA	2,700	1,900				3,900		4,200	9,100			21,800
KEGALLE	4,300	1,010						800	3,600			9,710
MANMAR		289	1,100			1,100	2,800		1,500			6,789
MATALE	1,200	1,300	100				2,100	3,500	6,100			14,300
MATARA		2,390	4,100					5,100	8,100			20,230
NAWALAPITIYA		712		1,300				900	1,600			4,512
NEGAMBO	4,500	1,600				8,400		12,000	20,000			46,500
NUWARA-ELIYA	500	2,152	700				100	2,900	8,000			14,352
POLONNARUWA		1,400						800	1,700			3,900
PANADURA	1,600	1,600		2,800				3,500	7,800			17,500
PUTTALAM		260	200				2,700		1,500			4,660
RATNAPURA	2,900	1,275			2,200			4,100	8,600			19,075
TRINCOMALEE	2,100	1,200					800	1,900	3,700			9,700
VAVUNIYA	2,200	375		1,400				1,400	2,300			7,675
TOTAL	141,390	136,016	37,500	26,300	48,300	36,800	29,100	395,500	649,700			1,464,906



FIGURE 8

TRINCOMALEE S.S.C. AREA



System Route Map (TRINCOMALEE SECONDARY AREA)







2.9

### Wildlife and Nature Conservation

So far as conservation of wildlife in the Trincomalee region of the eastern province is concerned, the focus is mainly on wild elephants, aquatic birdlife on the coast and more recently on the whales in the seas off the coast.

With the commencement of the Accelerated Mahaweli Project and the development of the various spheres of industry and agriculture that followed, the town and its environs went through tremendous development with its vast productive potential. Naturally the integrated impact on this environment had to be extensively felt, to the detriment of the conservation of nature and wildlife. There has been admittedly massive clearing of jungle, illicit felling, poaching and other destructive practices including chenaing and even gemming in those regions. These disturbances interfered with habitats of wildlife dislodging or driving them out from their abodes. In these circumstances many animal species perished in the hands of poachers who exploited them for commercial purposes. Most affected by those ecological changes were the wild elephants and the aquatic birdlife for which the littoral mudflats on the coast line offered sanctuary. In the Naval Headworks area wild elephants then became a problem to the residents of the Air Force base in China Bay and the air field. One troublesome elephant was captured and disposed of in 1963. These elephants even invaded the tarmac constituting a serious hazard to planes landing and taking off. With the capture of this elephant the problem solved itself and the Naval Headworks area was declared a sanctuary in 1963. These elephants were using the Air field as a corridor between the Kantalai forest reserve and Sober Islands via the Clappenburg jungles.

### Trincomalee's proposed Sanctuary

As the years passed, further development took place in the town and its environs of which the most significant were the Tank farm for the storage of oil, the Prima complex and other industrial plants. Recently the proposal to set up the Coal Fired Project by the CEB emerged. The project is characterised by 4 phases and four temporary sites which had been provisionally selected (Fig. 9). This was the initial stage and appears that it would be at least four or five years before the project comes into full operation. All four sites which has been selected happen to fall within the proposed sanctuary and in the light of these developments the need for setting up the reserve cannot be over emphasised.

It is also known that a herd of wild elephants, circulated seasonally from the north moving southwards,



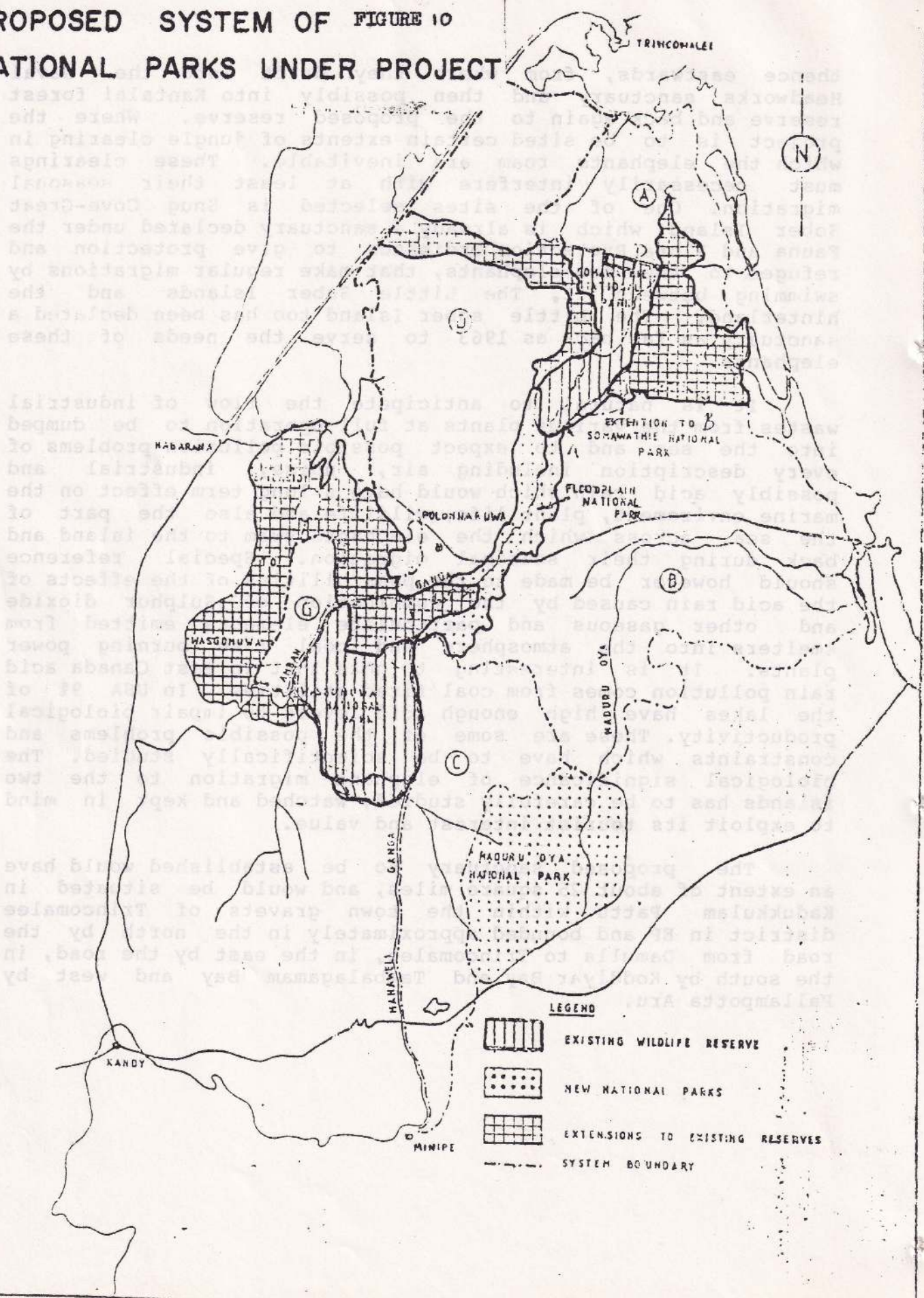
thence eastwards, from where they drift into the Naval Headworks sanctuary and then possibly into Kantalai forest reserve and back again to the proposed reserve. Where the project is to be sited certain extents of jungle clearing in which the elephants roam are inevitable. These clearings must necessarily interfere with at least their seasonal migration. One of the sites selected is Snug Cove-Great Sober Island which is already a sanctuary declared under the Fauna and Flora Protection Ordinance to give protection and refuge to the few elephants, that make regular migrations by swimming between it, The Little Sober Islands and the hinterland. The Little sober Island too has been declared a sanctuary as far back as 1963 to serve the needs of these elephants.

It is natural to anticipate the flow of industrial wastes from the various plants at full operation to be dumped into the sea and to expect possible pollution problems of every description including air, noise, industrial and possibly acid rain which would have a long term effect on the marine environment, plant life, wildlife and also the part of the sea, across which the elephants swim to the island and back during their seasonal migration. Special reference should however be made to the possibilities of the effects of the acid rain caused by the combination of Sulphur dioxide and other gaseous and particulate elements emitted from smelters into the atmosphere and coal fire burning power plants. It is interesting to note that in east Canada acid rain pollution comes from coal fired utilities. In USA 9% of the lakes have high enough acid levels to impair biological productivity. These are some of the possible problems and constraints which have to be scientifically studied. The biological significance of elephant migration to the two islands has to be carefully studied, watched and kept in mind to exploit its tourist interest and value.

The proposed sanctuary to be established would have an extent of about 25 square miles, and would be situated in Kadukkulam Pattu within the town gravets of Trincomalee district in EP and bounded approximately in the north by the road from Damulla to Trincomalee, in the east by the road, in the south by Koddidiyar Bay and Tambalagamam Bay and west by Pallampotta Aru.



PROPOSED SYSTEM OF  
NATIONAL PARKS UNDER PROJECT





The area covers a stretch of beautiful jungle and includes vast picturesque landscapes designed to give protection to the two herds of migrating elephants and the prolific array of the aquatic birdlife, some of which are rare migrants which settle during the season on the peripheral coastline.

It is unfortunate that the present prevailing terrorist activity might be causing needless interference to the jungle habitats which harbour these elephants and other wild species and even altering their behavioural patterns by firing and disturbances in the environment.

The development of the Mahaweli region and its reservoirs under the Accelerated Mahaweli Development programme followed the massive clearing of jungle as a result of which several wild species were either dislodged, displaced or destroyed causing an ecological imbalance which it went through to benefit man. Since then anticipating naturally favourable conditions, there was a steady influx of people from other areas adding to the existing population. To restore the ecological imbalance arising from this massive clearing and the displacement of the various wild species from their habitats, and to off set any detrimental effects under the programme, the 5 year Mahaweli Environment Project was set up in 1982 and was designed to assist Sri Lanka in developing a series of environmentally sound and socially acceptable protected areas round the scheme - and also to manage the areas so as to maximise benefits to agriculture and the settlers. Under the programme some 190,000 hectares of protected areas were to be indentified as national parks and also in its environs to voluntarily settle about 450,000 people in small farms. The four protected areas projected were the establishment of the Maduru Oya, Wasgomuwa, Flood Plains, Somawathiya national parks. The Maduru Oya, Wasgomuwa, Flood Plains national parks have since been declared and the Somawathiya (its extensions including Trikonamadu nature reserve) has been surveyed and should be declared shortly. The objective of these declarations is to establish a continuous chain of national reserves with a network of forest corridors, linking the Naval Headworks sanctuary, Huruluwewa forest reserve and the Trincomalee proposed sanctuary, for the free and unfettered migration of the various elephant herds in the Mahaweli basin (Fig. 10).

Trincomalee has lately become popular among the 'whale watchers' world over, due to its large whale population. For some reason of nature not understood yet, whales had not been observed in any other part of the Indian Ocean other than the coast of Trincomalee. Recently at an International Symposium on marine mammals in the Indian Ocean held in Colombo there was a ready response to the recognition of conserving these valuable



species, affording thereby an opportunity to assess their present state, specially in relation to the Indian Ocean and also around the waters of Sri Lanka.

The results of this consultation and the available data on these mammals, indicate the need for learning more about the new resource found in our waters. From this endeavour emerged the concept of non-consumptive use and the prospect of protecting these marine mammals and at the same time deriving a commercial benefit therefrom. This non-consumptive acceptance was greatly enhanced by the knowledge that today the revenues from whale watching were fast overtaking the revenues derived from commercial whaling.

It is very important to emphasize the need to build local expertise and accommodate visiting scientists on mutually beneficial terms. The object of this exercise is to attempt an assessment, significance and frequency of occurrence of whales. What is essential is the participation of local personnel in this research on the data gathered so far in accordance with the Law of the Sea governing marine scientific research. It is important to keep in mind that whale watching is carried out under controlling body. In other countries uncontrolled watching has some adverse affects on whale behaviour.



## Part 3

### 3.1

#### Concept

Development activities taking place under the Accelerated Mahaweli Programme are expected to assist agriculture activities in over 700,000 acres of land in the area. With the development of these areas, the town of Trincomalee will have to develop as the main urban centre to serve its hinterland comprising the eastern and northern half of Sri Lanka. Hence, Trincomalee as it is, will not be in a position to meet these heavy demands which will be made as in the immediate future.

The consequence of the cumulative impact of the growing importance of Trincomalee can be particularly seen in the demographic pattern in the town and its district. Thus, the population in the town has grown from 9,731 persons in 1881 to 44,913 in 1981. The population density of the town at the 1981 census was 14,971 persons per sq.km. The latter is about the same as Jaffna M.C. and Negombo M.C. and is only just less than the national capital of Sri Jayawardenepura-Kotte. On the other hand it is higher than Galle and Kandy municipalities.

The district population has grown from 19,400 persons in 1871 to 256,790 in 1981. The latter has increased at extremely high rates due to inward migration in the post 1981 period. Thus, if the entirety of the previously mentioned systems of the Mahaweli Project gravitate towards Trincomalee, then it will comprise a catchment of nearly 3.9 million persons in the farms and non-farm sectors.

#### The national setting and the focus of Trincomalee

A study of the spatial distribution of the resources and development activities in the country indicate that a predominant share of same lie in a corridor contained within two lines drawn between Chilaw and Kuchchaveli, and Bentota and Katankudi respectively. It comprises a 50-mile wide land belt joining Colombo and Trincomalee as the foci at its two ends (Fig. 11).

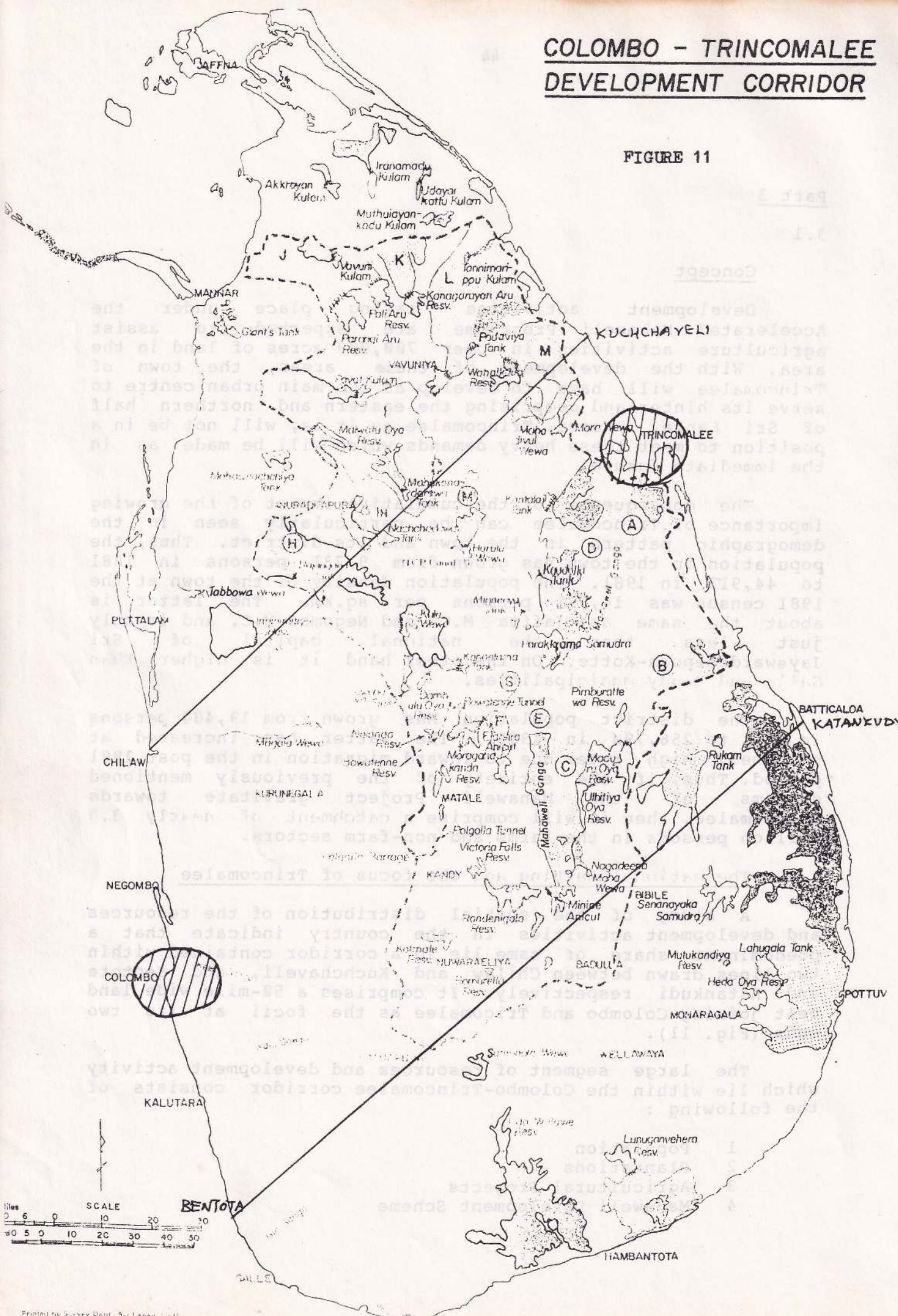
The large segment of resources and development activity which lie within the Colombo-Trincomalee corridor consists of the following :

- 1 Population
- 2 Plantations
- 3 Agricultural Projects
- 4 Mahaweli Development Scheme

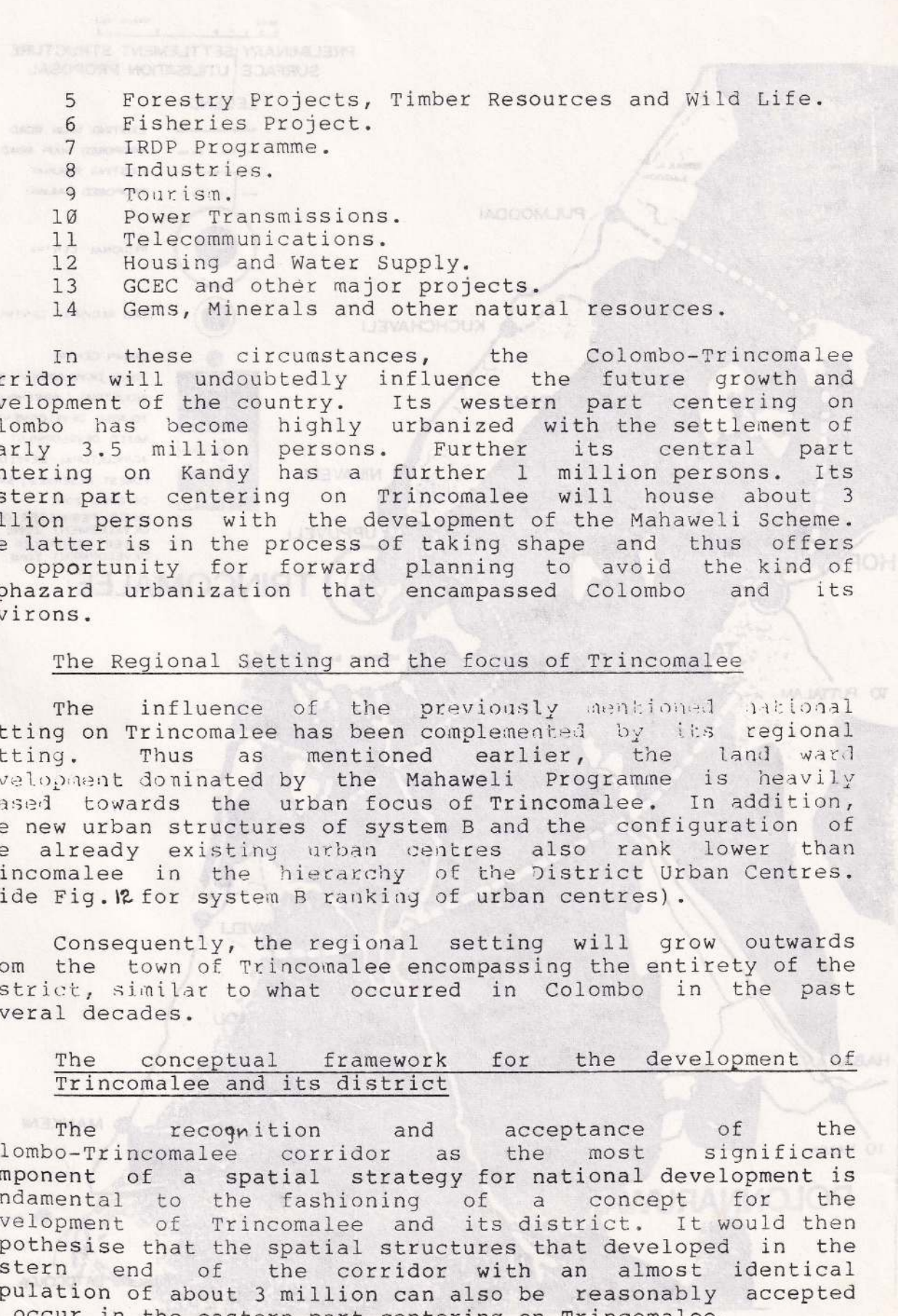


COLOMBO - TRINCOMALEE  
DEVELOPMENT CORRIDOR

FIGURE 11





- 
- 5 Forestry Projects, Timber Resources and Wild Life.
  - 6 Fisheries Project.
  - 7 IRDP Programme.
  - 8 Industries.
  - 9 Tourism.
  - 10 Power Transmissions.
  - 11 Telecommunications.
  - 12 Housing and Water Supply.
  - 13 GCEC and other major projects.
  - 14 Gems, Minerals and other natural resources.

In these circumstances, the Colombo-Trincomalee corridor will undoubtedly influence the future growth and development of the country. Its western part centering on Colombo has become highly urbanized with the settlement of nearly 3.5 million persons. Further its central part centering on Kandy has a further 1 million persons. Its eastern part centering on Trincomalee will house about 3 million persons with the development of the Mahaweli Scheme. The latter is in the process of taking shape and thus offers an opportunity for forward planning to avoid the kind of haphazard urbanization that encompassed Colombo and its environs.

#### The Regional Setting and the focus of Trincomalee

The influence of the previously mentioned national setting on Trincomalee has been complemented by its regional setting. Thus as mentioned earlier, the land ward development dominated by the Mahaweli Programme is heavily biased towards the urban focus of Trincomalee. In addition, the new urban structures of system B and the configuration of the already existing urban centres also rank lower than Trincomalee in the hierarchy of the District Urban Centres. (vide Fig.12 for system B ranking of urban centres).

Consequently, the regional setting will grow outwards from the town of Trincomalee encompassing the entirety of the district, similar to what occurred in Colombo in the past several decades.

#### The conceptual framework for the development of Trincomalee and its district

The recognition and acceptance of the Colombo-Trincomalee corridor as the most significant component of a spatial strategy for national development is fundamental to the fashioning of a concept for the development of Trincomalee and its district. It would then hypothesise that the spatial structures that developed in the western end of the corridor with an almost identical population of about 3 million can also be reasonably accepted to occur in the eastern part centering on Trincomalee.



Such a hypothesis will include manifestations of the magnitudes of the populations in the probable urban centres including outside Trincomalee town.

Thus in the same manner as in the Colombo District a suburban structure will emerge in and around Trincomalee town representing an inner suburb and a greater Trincomalee region.

It will therefore be necessary to conceptualize an inner and outer suburban structure of urban centres growing from Trincomalee town and to super-impose same on a probable zoning plan.

Fig. 12 has attempted to translate the above mentioned concept into a live situation. It shows that the formulation of a micro-level spatial strategy in the land ward side of the Trincomalee district is a necessary pre-requisite to the siting of individual projects; especially those of a strategic nature.

### 3.2.3 Regional Setting

According to the 1981 census Trincomalee district has a population of 256,799 of which 83,262 are concentrated in the urban centers of Trincomalee (44,913) Mutur (12,746) Kinniya (12,310) and Kantalai (7,293).

Besides Trincomalee other urban areas are not adequately developed to provide urban services required by their hinterland.

Interaction of Trincomalee with the rest of the district is determined by its position as the district administrative head quarters, the economic development in the area, the commercial centre for the district and the development activities in the catchment area. Cultural centres at Tiliyaya, Weligama, Gokanna, Veyera, Koneswara Temple and Kinniya hot wells are visited by pilgrims from all over the country. The speculated development in the China Bay area is calculated to generate 30,000-50,000 jobs, capable of supporting an additional population of 150,000.



### Planning Perspective

#### 3.2

##### 3.2.1 Present Status

Trincomalee, which was declared an Urban Council in 1954 is the 13th largest town centre in the country and the second largest town followed by Jaffna, in the dry zone. The planning and physical development of the town is presently governed by the UDA planning & building regulations. The total extent of the town is 3 square miles or 1920 acres.

Presently the town has confronted with many environmental problems caused by congestion in the town centre, narrowness of streets, lack of infrastructure facilities, encroachment into crown lands and growth of sub-standard housing units. The population in the town is 44,613 according to the 1981 census. This is an increase of nearly 10,000 over the 34,817 persons recorded in 1963. Owing to the above condition of congestion it is apparent that the town needs an urgent development plan.

The stress on the infrastructure facilities has become more acute with the rapid development of the Catchment area. Thus tourist industry at Nilaveli, industrial complexes at China Bay, the Mahaveli Development in the Muttur area and the sugar factory at Kantalai are factors to be considered in the planning of the town.

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### 3.2.3 Economic Base of the Town

Trincomalee is not only the District capital but also the major service centre. The nature of the economic activities show that the town does not have adequately developed industrial bases.

Table 14 gives the employment pattern of the urban sector in 1971 for the Trincomalee district. This being the largest and the most developed urban centre in the district, the picture given in the table would clearly represent the economy of the town.

Table 14 - Employment Pattern in the Urban Sector 9 - The Trincomalee District (1971)

Category	Total	%
1. Professional, Technical and related services	1088	6.00
2. Administrative and management workers	122	0.70
3. Clerical and related workers	1576	8.70
4. Sales Workers	2061	11.40
5. Service Workers	1465	8.10
6. Agricultural, animal husbandry, forestry workers, fishermen & hunters	4776	25.80
7. Production and related workers	6500	36.00
8. Labourers	3588	19.90
	<u>18073</u>	<u>100.00</u>
	====	=====

In studying the above information due consideration should be given to the hidden unemployment and self employment pattern in the town which often goes unrecorded. The tourism sector and the activities associated also form a significant sector in the economy. Trincomalee is one of the major fishing areas in the country and this constitutes a very high percentage of employment in the agricultural sector. (Table 14).



The town has immense opportunities for economic development specially in the manufacturing sector, with the facilities that are being located in the China Bay area manufacturing industries could become a significant sector in the economy of the town in the future.

### 3.2.4 Land Use Pattern

Table 15

Use	Average	Average as a % of the total
1. Residential	925.13	48.18
2. Roads	112.15	5.84
3. Public Uses	164.81	8.58
4. Schools	52.75	2.70
5. Army	51.20	2.67
6. Religious & other Institutions	43.00	2.24
7. Commercial	32.27	1.68
8. Hotels, Restaurants	19.92	1.03
9. Cemeteries	13.74	0.71
10. Industries	4.53	0.24
Total developed area	1419.05	73.93
1. Vacant land	161.53	8.40
2. Agricultural land	207.63	10.81
3. Marshy	28.16	1.47
4. Water bodies	25.60	1.34
5. Reservations	29.13	1.51
6. Open space (public)	48.90	26.07
Total undeveloped area	500.95	26.07
Overall Total	1920.0	100.00

Table 15 shows the break down of the land use pattern of Trincomalee.



Problems associated with each of these categories are highlighted below :

#### Commercial Area Problem

- (a) Due to inadequacy of space available for commercial activities, specially at the town centre, traders have encroached on to public open area.
- (b) Inadequacy of amenities in the Town Centre.
- (c) Dispersed nature of commercial activities specially at the Anuradhapura junction, spreading beyond the town limits.
- (d) Conversion of residential buildings into tourist hotels and guest houses specially along the Dockyard Road and Dyke Street.
- (e) Narrowness of the streets.
- (f) Undesirable visual impact caused by the shanties in the town centre.

#### Residential Area (48.18%)

- 1 Sub standard housing which is on the increase. Areas where these houses are located do not enjoy water, electricity, drainage or sewerage facilities.
- 2 High population density in residential areas. According to the net residential density the town could be divided into 3 density zones.

#### Ward

#### Population Density

7, 8, 9

100 - 150

1, 2, 3

40 - 80

4, 5

20 - 40

Thus in wards 7, 8 and 9 there is hardly any land left for housing. In the second category of wards a considerable extent of land is under public use, mainly administrative, and this restricts the land availability for housing.

As a result of the construction of houses in highland areas of Oris hill, and Abayapura area, soil erosion has and is taking place.



### Undeveloped Land

Total extent of undeveloped land is approximately 500 acres and accounts for nearly 26% of total. This includes shrub jungles, abandoned and existing agricultural areas, marshy land and vacant land. These are mainly concentrated in wards 6, 10, 11 and 12.

### Public Uses

Total extent is 164.81 acres accounting for nearly 8.6% of the total. The major district administrative complex is at Fort Fredrick where Army has a permanent base. When compared with the extent dedicated for public use in other district capitals, such as Jaffna, Galle and Kalutara it becomes evident that there is an irrational utilisation as far as land use is concerned.

District Centre	Population in the district	Population per 1000 acres
Jaffna	41.86	0.008
Galle	61.75	0.012
Kalutara	105.16	0.020
Trincomalee	164.81	0.103

Public officers are very badly scattered along the Inner Harbour Road, Fort Fredrick and Love Lane. The last is a newly developed area for the proposed public use and the land is very badly under-utilised.

### Road Net Work

This accounts for nearly 112 acres or 5.84% of the total. The roads can be categorised as primary, secondary or local roads. The narrowness of streets and inadequate street line reservation are major problems in this sector.

### Educational

There are 18 schools in the town consisting of a total of 52.75 acres or 2.7% of the total area of the town. In addition to the above 18 schools there are 4 other schools just outside the town limits which are attended by students from the town area as well. Total student population in these schools is 12,545 and is composed of 7068 students in the primary section, 4569 in the junior secondary section and 908 in the advanced level section. Of the total, 8034 are from the town and 4511 are from other areas. Although the average land area per student is 199.6 sq. ft., 9 schools have recorded an acute shortage of land with one of these schools recording a shortage of 86.4% of the normal requirement. (Table 16 ).



Table 16

School	Required extent (acres)	Available extent (acres)	Shortage land extent (acres)	(Shortage) % of the required
1. Methodist College	1.416	1.193	0.223	15.6
2. Pulttavlaner Tamil Vid.	1.992	0.250	1.672	86.4
3. St. Mary's College	2.693	1.037	1.656	57.8
4. RMK Hindu College	1.782	0.544	1.238	69.5
5. St. Konesar Vid.	1.562	0.256	1.306	83.6
6. Muslim Maha Vid.	0.777	0.687	0.090	11.6
7. Vigheshvara Vid.	3.765	1.275	2.490	66.04
8. St. Zavier Vid.	2.341	1.500	1.841	79.0
9. Linganagor Vid.	0.298	0.180	0.118	60.3
TOTAL	16.556	6.992	10.434	63.02

The other schools have largely under-utilised land as seen in Table 17.

Table 17

School	Required Extent (acres)	Available extent (acres)	Shortage land extent (acres)	Excess as % of the required
1. Shanmuga Vid.	3.775	3.868	0.093	24.6
2. Sinhala MMV	3.188	6.000	3.812	88.2
3. St. Joseph Col.	2.494	5.000	2.506	100.2
4. Sinhala Junior School	2.638	4.000	1.362	51.8
5. Uppuveli Muslim Vid.	1.139	4.293	3.054	277.0
6. Ovis Hill Tamil Vid.	1.227	3.457	2.230	180.0
7. Abayapura Sinhala Vid.	2.375	15.044	12.669	533.0
8. Kalaimagal M. Vid.	0.968	1.525	0.557	51.5
9. St. Anthonis RCS Vid.	0.462	0.637	0.165	27.5
	17.376	43.824	26.448	158.26



The Vigheshvara Vidyalaya located at the town centre is incompatible within the commercial area especially when land values, security of children from traffic, congestion etc, are considered. St. Xavier Vidyalaya also suffers from a shortage of land and expansion will be costly due to high residential density in the area. On the other hand St. Anthonis Vidyalaya has the land underutilised. The present location could be more profitably utilised as a public open space.

In Trincomalee there are no institutions for technical education or for man power training. The land presently occupied by Abayapura Kanista Vidyalaya could be utilised for this purpose, and this school could be amalgamated with the nearby Sinhala Medium schools, thus providing a facility for man power training to cater for development activities.

#### Public Open Space

Total extent of land available as public open space is around 48.0 acres and are located in ward 1. Organized public open space is not at a convenient distance to town dwellers. The area is over 40 acres in size and is presently encroached by vendors at its Clock Tower edge. Besides the stadium in it the area is not well maintained as a public open area.

#### Water Bodies

There are three major water bodies covering a total of 25.6 acres. Dhoby's Pond at the Southern end of the town is used by washerfolk.

#### Reservation

The town area also consists of reservations of beach. Except the reservation by the Fort Fredrick Road the reservations along the Eastern boundary of the town has been encroached.

#### Hotels and Restaurants

Although there is a high potential for tourism in the town there are only a few authorised hotels. Many residential units have been converted into tourist hotels and restaurants without proper approval, specially along Dyke Street and Dockyard Road.

#### Industrial Sector

Industrial sector consists of a few rice mills, two ice factories and liquor industries. These are located in a scattered manner. Although there is a potential to expand this sector in the town not much attention has been paid to it. A location for small scale industrial activities is an important necessity of the city.



### 3.2.5 Population Analysis

The population picture of the Trincomalee district is given in Table 18.

Table 18 Population growth in Trincomalee District between 1963-81

Sector	1963		1971		1981	
	Total	Average growth rate	Total	Average growth rate	Total	Average growth rate
District Total	138563	6.5	188245	4.5	256790	3.6
1 Rural	103736	-	116600	1.5	173528	4.5
2 Urban	34817	-	72239	13.4	83266	1.5
2.1 Trincomalee	34817	-	40392	1.6	44913	1.05
2.2 Muttur	-	-	11652	-	15746	3.47
2.3 Kinniya	-	-	15380	-	15310	0.04
2.4 Kantalai	-	-	4535	-	7293	5.43

Source : Census of population 1971-1981

The figures show a decline in the population growth in the district when compared to 1963. But on the whole the district has an influx of population. This appears to be the result of the Mahaweli Development scheme, which covers the Muttur and Seruwila areas.

In the period after 1971 the rural sector has recorded faster growth rate than the urban sector. Although presently Trincomalee town has a growth rate lower than that of the national average it is expected to grow at a rate of 1.5% with the speculated development in the China Bay area and under the Mahaweli Development Scheme.

### Social Composition of Population

Population in the town consists of 28,775 (64.06%) Tamils, 11,284 (25.12%) Sinhalese, 3,864 (8.6%) Muslims and 1,028 (2.28%) others. Religion wise there are 23,296 (51.86%) Hindus, 10,680 (22.77%) Buddhists, 4,429 (9.86%), Christians 5,825 (12.46%) Muslims and 683 (1.52%) others. Of the total population, 24,415 (53.36%) are males and 20,498 (45.64%) are females. This represents a male:female ratio of 100:84.

Age Composition of the population is as follows :- 1981

Age Group	0-4	5-14	15-59	Over 60 Years
Total	7,208	11,641	24,100	1,453
Percentage	16.05	25.92	53.66	4.35



The unemployment rate of the district is 39.4%. But this should definitely be substantially lower than this due to the high rate of hidden employment. As the main source of non-public sector employment is fishing, the people easily categorised themselves as unemployed, mainly to avoid the loss of subsidies and prospects of a permanent occupation in the public sector.

School attendance rate in the district is 64.04%. The 35.96% of non school going population could be expected to be less than this as a certain number of students are educated in areas outside town limits.

### 3.2.6 Housing

In 1971, 7,190 units of housing were available and these composed of 3,782 (52.6%) permanent houses, 1,573 (24.9%) semi-permanent houses and 1,835 (22.5%) temporary units. In 1981 total housing stock was 8,032 units showing an increase of 11.7% over the 1971 figure. The household size is 5.6 and is assumed to stay so up to 2006.

Temporary units are mostly in Sandi Cove, Sirimapura, Jayasumanaramaya and Sanatu Lane. Housing stock in ward 1-8 (excluding ward-6) mainly consists of old detached units. Of the 1981 total, 3,064 will be obsolete by 2006 as all these have been constructed before 1946.

A ward wise analysis of the residential densities are given in Table 19.

Table 19

Ward	Resid. Density Acres	No. of Units 1981	Housing Density per Acre	Average Plot size (perches)
1	55.3	826	15.00	9.5
2	32.00	516	16.00	9.0
3	54.56	486	9.00	16.0
4	23.04	443	20.00	7.26
5	47.10	727	15.43	9.4
6	194.48	970	5.00	28.8
7	33.28	610	18.00	8.0
8	19.46	553	28.00	5.0
9	29.69	668	23.00	6.2
10	154.88	1108	7.00	20.1
11	81.92	315	4.00	40.0
12	199.68	807	4.00	40.00
	925.13	8032		16.0



Wards	Density Range per acre	Average Plot size perches
8, 9, 4	over 20 units	5-7.2
7, 2, 5, 1	15-20 units	8-9.5
3, 10, 6	-	
12, 11	below 10	16-40

3.2.7 The existing bus stand occupies a portion of the public market site and does not have any facilities for commuters. Due to the non-availability of proper parking space the vehicles in the town centre are often seen parked on crown land and thus the UC loses a considerable income as parking fees.

### 3.2.8 Water Supply

Presently only 322 domestic units, 85 commercial units and 24 public units enjoy pipe-borne water. A new supply scheme with a capacity of 800,000 g. per day is nearing completion. In addition provision has been made for 116 stand pipes. The high rate of dependence on wells for water is a factor which stalls plans to have water seal or flush toilets, as the sandy soil in the area can cause seepage of pollutant matter into wells.

### 3.2.9 Drainage

The existing drainage system was inherited from the British. The drainage system has outlets at many points. The outlets at Dutch bay pollutes the beach used by the tourists who patronise the hotels at Dyke Street and Dockyard Road. A comprehensive study should be undertaken on the lay out of the drains. Some of the central drainage ponds used to drain the low lying areas in the town have been filled and used for house construction.

### 3.2.10 Sewerage

Only 82.6% of a total of 5,586 house holds have any toilets facilities. Of this 4,451 (64.4%) are bucket latrines, 549 (7.9%) are pit type, 421 (6.1%) flush type and 165 (2.4%) water seal. Nearly 1,200 house holds (17.4%) do not have any facility and use the beach. This type of beach use affects both the fishing industry and tourism. Due to the high density and the low plot size ranging from 5-9.5 perches in ward 1-9 (excluding ward 6) sinking of individual wells for sewerage disposal is a problem. Hence, a sewerage system would be of great importance in these areas.



### 3.2.11 Electricity

Only 40.8% of the residential units (3,279 units) enjoy electricity. Most of the temporary and semi-permanent units are not provided with electricity. A shanty upgrading scheme is required to provide this facility to more house holds.

### 3.2.12 Medical Facilities

The total hospital bed strength in Trincomalee district is 489 of which 284 are in the Base Hospital located in the town. Other than this, medical centre closest to town is located about 10 miles away from the town. Base Hospital is the only medical facility for an area of about 8 miles radius. Existing health facilities are inadequate and needs improvement. A secondary medical centre at Anuradhapura junction would relieve the base hospital of the present work load.

### 3.2.13 Existing problems in Trincomalee

#### a) Land Use Problem :-

- 1 Congestion in the town centre.
- 2 Incompatible uses - Location of CTB bus stand, public market and schools in the town area.
- 3 Encroachment on crown lands and streets.
- 4 Spill over development in the area adjoining town limits.
- 5 Under utilisation of land, specially in the public use sector.
- 6 Transformation of residential units into other facilities on an ad hoc basis.

#### b) Environmental Problem

- 1 Sub standard housing areas.
- 2 Inadequate ~~sewerage~~ and drainage facilities.
- 3 Erosion in highland areas.
- 4 Floods in low lying areas.
- 5 Pollution on beach, water bodies and reservation areas.
- 6 Condition of disrepair specially in public buildings.
- 7 Filling of lagoon eg. Yard Cove.

#### c) Traffic & Transport

- 1 Narrowness of road system.
- 2 Inadequate parking facilities.
- 3 Incompatible location of public market and bus stand.
- 4 Non-availability of a private bus stand.
- 5 Undeveloped roads and inadequate drainage facilities.



#### d) Inadequacy of community facilities and amenities

- 1 Inadequacy of market facilities.
- 2 Non-existence of a common sewerage system in high density areas.
- 3 Lack of amenities in shanty areas.
- 4 Inadequate medical facilities.
- 5 Inadequacy of well distributed organized open space.

#### 3.2.14 Objectives of the Plan

- 1 Provision of adequate marketing facilities.
- 2 Rational land utilization.
- 3 Prevent encroachment on urban land and reservations.
- 4 Planned central development.
- 5 Promoting low income housing and shanty rehabilitation.
- 6 Provisions of adequate amenities.
- 7 Prevention of unauthorised conversion of house holds for other uses.
- 8 Promotion of environmental quality and character.
- 9 Promotion of traffic movement facilities.
- 10 Promotion of opportunities for development outside the city limits.
- 11 Matching development with existing infrastructure facilities and prevention of undesirable concentration of development.
- 12 Reservation of areas to be utilised for future development activities.
- 13 Phased development.
- 14 Enforcement of minimum plot size for housing.
- 15 Enforcement of special rules pertaining to low income housing, regarding plot size, side spaces and areas.

#### 3.2.15 Strategies

- 1 Zoning of land for different uses.
- 2 Zoning of land for mixed residential and industrial uses.
- 3 Zoning of land for public uses, public open spaces and reservations.
- 4 Zoning areas for parking and other transport uses.
- 5 Imposition of preventive measures against unauthorised conversion of residential buildings into other uses.
- 6 Identification of minimum plot sizes for buildings.
- 7 Relax rules pertaining to road access, plot sizes, rear space etc. regarding low income housing.
- 8 Imposition of special guidelines for development in areas subjected to erosion.
- 9 Shanty upgrading and relocation of substandard housing units where upgrading is undesirable.



- 10 Enforcement of maximum floor area usage for different uses.
- 11 Enforcement of street lines and building lines for different categories of roads.
- 12 An expansion of the town limits to include areas of spill over development.
- 13 Identification of action projects.

### 3.2.16 Action Projects

#### a) Central Area Development Project

- 1 Relocation of the bus stand.
- 2 Construction of a super market.
- 3 Re-development of the fish market site.
- 4 Provision of parking for taxis and private coaches.
- 5 Conversion of the Vigneshwara Vidyala site into a commercial office site.
- 6 Landscaping the belt of land between the beach and the Koneswara Road.

#### b) Development of a Second service centre

- 1 Allocation of land for a pola, a bank, offices and a medical centre.

#### c) Environment upgrading projects

- 1 Dredging the Yard Cove lagoon and reclaiming the low lying land in front of it.
- 2 Landscaping projects,
  - i. see 3.2.16.a above
  - ii. landscape the green belt.
- 3 Provision of basic amenities for low income areas.
- 4 Construction of drains and road upgrading in erosion affected areas.

#### d) Public Uses Projects

- 1 Medical complex projects.
- 2 School expansion and amalgamation projects.

#### e) Housing Projects

- 1 Identification of areas for housing.
- 2 Shanty improvement projects.
- 3 Relocation of UC labour lines at Periyakadai.

#### f) Infrastructure Development Projects

- 1 Road widening work to be carried out on the following roads, on a priority basis :

1. Ehambaram Road ) up to railway
2. Central Road ) approved road



3. Main Street
4. Dockyard Road
5. Konesar Road

- 2 Sewerage project for ward 1-9 (excluding ward 6)
- 3 Drainage project covering wards 1-10 (excluding ward 6).
- 4 Recreational projects to provide playground.

### 3.2.17 Proposed Structure Plan

The existing structure of the town has been determined by the major physical characteristics of the area. Almost all public uses, infrastructure facilities and high density housing areas are along the inner harbour road. The Central Bus Stand (CBD) is located in the Clock Tower area where all major traffic routes join. As seen from the population figures a decline has been recorded in ward 1, 2, 3, 5 and 8 which compose the old town area. This shows that this area has grown to a maximum saturation. On the other hand population growth indicates that the rest of the town area records a higher growth rate.

As a result of the growth of the population in the immediate periphery of the town and the convergence of main traffic lines into the area, a second service centre has come up at Anuradhapura junction. This centre has spilled over to the Uppuveli V.C. area, neighbouring the Trincomalee UC.

The proposed structure plan attempts to establish a hierarchy of various activities by the distribution of functions in the town in a logical manner. The second service centre proposed at Anuradhapura junction will be developed to include not only commercial activities but also certain other services of a secondary level such as administrative, health and banking.

In the proposed structure plan the central area comprising of wards 7, 8 and 9 will have the highest densities in the town and will be followed by the second density zone consisting of wards 1, 2, 3, 4 and 5. The rest of the areas will have lower densities.

The proposed action and the guide lines will improve the infrastructure position and the quality of environment in the low density area resulting in their fast development. The annexation of the strip of land from the Uppuveli V.C. to the UDA zone will help to maintain a planned structure in the second service centre area.

### Development Plan

The existing ward boundaries do not represent the functional characteristics of the town and thus requires a reorganization of political units as indicated in Table 20.



Table 20

Proposed Land Use Pattern for 2006

	Acres	%
1 Primary Residential	944.16	49.24
2 Mixed Residential	44.62	2.32
3 Public Uses	154.72	8.03
4 Religious Institutions	71.10	3.70
5 Parks	74.01	3.64
6 Reservations	70.03	3.68
7 Industries	22.12	1.15
8 Landscape Areas	22.93	1.19
9 Commercial Areas	59.23	3.13
10 Water Bodies	25.60	1.33
11 Roads	192.09	10.00
12 Educational institutions	53.53	2.83
13 Transport	18.54	0.96
14 Tourism	11.54	0.64
15 Deferred Uses	143.04	7.44
16 Cemetery	12.74	0.71
	1920.0	100.0



## 3.3

Institutional Framework

Several alternatives exist as regards the institutional arrangement for the proposed activities.

- First; the creation of a separate statutory body responsible for integrated development viz, A Trincomalee Development Authority (TDA).
- Second; setting up of a co-ordinating body comprising of various Government entities concerned.
- Third; identifying a responsible line Ministry or a Ministerial entity to handle the key areas of activities.

Of these the first is the most appropriate. However, an interim ad hoc arrangement might pave the way for early start up of activity.



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Appendix I      Sites of Archaeological Interest



Appendix I Sites of Archaeological Interest



101  
2

Nachimalai.

District : Trincomalee.  
D.R.O's Div. : E/Kaddukulam Pattu.  
Village : Kutchchaveli.  
Map Ref. : D. 12/24.

Brahmi inscription of the 3rd century B.C. are found in three drip-ledge caves on a fair sized boulder lying on a much higher boulder on a rocky hill about two miles to the west of Kutchchaveli. A small dagoba at site is now ruined completely.

20  
2

Seruvila.

p322

District: Trincomalee.  
D.R.O's Div.: Seruvila.  
Village: Seruvila.  
Map Ref.: G 4/49.

In the 2nd century B.C. there was a kingdom called Seru in the area presently called Seruvila. King Kavantissa erected in the kingdom of Seru a dagoba in which was enshrined the frontal bone of the Buddha. This is the present Seruvila dagoba. This dagoba was completely renovated at the beginning of the present century. The remains of ancient structures still survive round the dagoba. In the area also are ancient caves. Two Buddha figures seated under the hood of the Naga King Mucalinda were found here.

25 Galmetiyawa.

2

District : Trincomalee.  
D.R.O's Div. : Kinniya.  
Village : Galmetiyawa Colony.

This site lies below the Galmetiyawa reservoir which is some four miles off the 102nd mile on the Kantale-Trincomalee Road. A Buddha statue sculptured in marble turned up at this spot. The statue appears to be worn out owing to the action of flowing water, but despite its worn out state it is a statue beautifully sculptured in the Amaravati style. Around the place of find of the statue are the remains of some structures strewn all over the land are brickbats and potsherds.



26  
2

Ancient Site by the Lagoon -  
Ilankaturai.

District: Trincomalee.  
D.R.O's Div.: Seruvila.  
Village: Ilankaithurai.  
Map Ref.: G 4/59.

There has been an ancient port here the Lankapattanam of Dathavamsa. Ancient Buddhist structures here have now become Hindu Kovils. In front of one of these kovils are two ancient balustrade stones and several stone pillars. Ancient pot shreds are found scattered in the area.

Route: Turn off to the North at the 50th mile on the Valachchanai-Trincomalai road and proceed about 6 miles on the Ichchilampattai-Ilankaturai road.

18  
2

Vatadage, Tiriyai.

P 327

District: Trincomalee.  
D.R.O's Div.: E/Thaddukulun Pattu.  
Village: Tiriyai.  
Map Ref.: D 7/60.

About a mile off a point between the 27th and 28th mile posts on the Trincomalee-Pulinuddai road is a Vatadage located on a hill to the west of the village of Tiriyai. A flight of steps on the south scarf of the hill gives access to its summit. The summit of the hill has been levelled to rear a small dagoba on it. Later this dagoba has been enlarged. Still later, about the 8th century A.D. the dagoba has been encircled by a vatadage. The platform of the vatadage is circular. Around the dagoba are two concentric circles of pillars. At the edge of the dagoba platform is a stone screen wall of about 6 ft. in height. At intervals on this wall are holes for pillars. Four flights of steps from the four main directions led to the dagoba. At the four corners round the dagoba are flower alters. In a cave on this hill is a pre-christian inscription. On a boulder here is an eighth century Sanscrit inscription which records a contemporary legend to the effect that the dagoba is the Girihandu dagoba built by the trading brothers Tapassu and Bhalluka. Here also are the remains of an image house and of other structures.



98

2

Ancient site at Ichchilampattai

District: Trincomalee.  
 D.R.O's Div.: Seruvawila.  
 Village: Ichchilam Pattu.  
 Map Ref.: G 9/27.

This ancient site is about one mile north east of the 50th mile on the Valachchenai-Trincomalee Road. There are several drip-ledge caves at this site. Below the drip-edges of five of these caves are pre-Christian inscriptions. There had been an ancient monastery at this site.

63  
2Ancient site, Illangaturai.

District: Trincomalee.  
 D.R.O's Div.: Koddigar Pattu.  
 Village: Illankaturai Mothuwaram.  
 Map Ref.: G 4/59, 60.

The site is on a hill close to the ransacked by treasure hunters. At the foot of the boulder is a drip-ledge cave. There are the remains of two ancient structures at the site. Inside one of these is the lower part of the figure of a deva or Bodhisatva. Near the structural remains are the traces of retaining walls.

Route: Turn off to the North at the 50th miles on the Valachchanai-Trincomalee road and proceed about 6 miles on the Ichchilampattai-Illankaturai road.

97  
2Eramaduwa.

District: Trincomalee.  
 D.R.O's Div.: Kaddukulam Pattu East.  
 Village: Eramaduwa.  
 Map Ref.: D 6/47, 48.

Here is an ancient stone Asana.

Route: Between Padaviya and Pulmoddai on the Padaviya-Pulmoddai road.



22  
2

Ancient site of Kuchchaveli.

District: Trincomalee.  
D.R.O's Div.: E/Kaddukulam Pattu.  
Village: Kuchchaveli.  
Map Ref.: D 12/24.

This site is in the land opposite the Kuchchaveli Rest House. The torso of limestone Buddha statue has been unearthed at this site. The statue is a beautiful work in the Amaravati style. Pieces of flat tiles and brick bats have turned up in quantity at the site. It is possible that there was a monastic establishment of the Anuradhapura times at this site. On a boulder of rock at the foot of a small hillock here is a sculpture consisting of 16 dagobas representations. Hard by is a Sanskrit inscription of the 8th century. The statue from the site is ~~at the Trincomalee Archaeological~~ Museum.

336

333

19  
2

Velgam Vehera.

District: Trincomalee.  
D.R.O's Div.: N/Kaddukulam Pattu.  
Village: Periyakulam.  
Map Ref.: D 18/43.

This site is some six miles on a road branching northwards near the 6th mile on the Trincomalee-Horowapotana road. The cholas who gave protection to the site had called it Rajarajaperumpalli. The older name of the site, however, was Velgam Vehera. In an area enclosed by a prakara are the remains of several image houses and of a dagoba. In one of these are the remains of a recumbent Buddha statue of brick. The statues in the other image houses had been of stone. The dagoba here stands on a square pavement. On the hill overlooking this site are also the remains of a dagoba. On a rock in this hill is the inscription of a commander named Abhaya in the reign of Bhatiya Tissa II (142 - 168 A.D.) which shows that a vihara of that date at the site had the name of Abhagara.



88      Ancient Site, Pulmuddai.  
2

District: Trincomalee.  
D.R.O's Div.: N/Eaddukulam Pattu.  
Village: Pulmuddai.  
Map Ref.: D 7/27.

About 1½ miles away from the ilmanik factory is an ancient site where there are a number of caves. In the pillared building which his ~~beyond~~ is the torso of a Buddha statue.

23      Fort Fredrick, Trincomalee.  
2

District: Trincomalee.  
D.R.O's Div.: Town & Gravets.  
Village: Trincomalee Town.  
Map Ref.: D 23/14.

In ancient times Trincomalee was known as Gokarna. Swami rock the highest point in Fort Fredrick is an ancient site where there had been Buddhist and Hindu shrines for a long time. Mahasen (275-301 AD) demolished some temple of a god at this site and reared the Gokarna vihara instead. Agbo V (718-724 AD) added a Preaching Hall to the Vihara. The structures here were demolished in 1624 by Constantine de Saa, the Portuguese General who erected a fortress there. The Dutch enlarged this fortress. The Britishers on capturing the island further enlarged the fortress and named it Fort. Fredrick. Excavations have yielded antiquities here time and again. A tamil inscription of the 16th century has been incorporated to the structure of the fortress at the entrance. This tamil inscription states that the Hindu Kovil at the site was destroyed by the Portuguese. In 1945 the statues of Vishnu and Laksni as well as a sanskrit inscription of AD 1225 was unearthed within the fort. The inscription recounts the landing at the site of a person called Codagangadeva.



62      Ancient Site, Mahaveli river  
2                      ford.

District: Trincomalee.  
D.R.O's Div.: Koddiyar Pattu.  
Village: North Mahaveli Forest  
Reserves.  
Map Ref.: G 8/20.

Here are the remains of a structure with 42 pillars. On one of these pillars is an inscription.

60      Ancient site at Atabendiwewa.  
2

District: Trincomalee.  
D.R.O's Div.: Kaddukulam Pattu.  
Village: Atabendiwewa.  
Map Ref.: D 16/56.

Here are the remains of a dagoba reared on a square terrace, rifled by robbers. On each of the four sides of the terrace is a flight of steps with plain guard stones and a moonstone. West of the dagoba are the remains of a building.

Route: Turn off to the North between 87th and 88th miles on the Horowpotana-Trinco road and proceed about 3 miles on the Etabendiwewa road.

75      Sri Agho Rajamaha Vihara.  
2

District: Trincomalee.  
D.R.O's Div.: Tampalakaman Pattu.  
Village: Gantalawa, Tissapura.  
Map Ref.:

A site in tract 8 of the Mullipatana Colony. Here are the remains of a small ruined dagoba built on a rectangular terrace. Hard by are a 4½ feet fragment of a standing Buddha statue and some pieces of the figure of some God.



74      Ancient site, Kantale.  
2

District: Trincomalee.  
D.R.O's Div.: Tampalakamam Pattu.  
Village: Tract 13 of Kantale  
Sugar Farm.

Map Ref.:

At this site are two broken Buddha statues and guard stones. Strewn about the site are brick bats and fragments of tiles. The Buddha statue depicted as seated under the nine hooded Muchalinda Naga (height about 4 feet) is now at the Archaeological Museum at Trincomalee.

77      Sri Gajaba Len Vihara.  
2

District: Trincomalee.  
D.R.O's Div.: Kaddukulam Pattu.  
Village: Pankulama.  
Map Ref.: C 17/53.

On an emirenee strewn with large boulders, in a site on the right bank of the Morawewa Colony are several dripledged caves. Of these three have Brahmi inscriptions.

Route: Turn to the South at Pankulam junction on the Horowpatana-Trinco road, and proceed about 1½ miles on the channel bund road.

65      Veherakanda.  
2

District: Trincomalee.  
D.R.O's Div.: Koddigar Pattu.  
Village: North Mahaveli Forest Reserve.  
Map Ref.: G 8/12.

At this site situated inside the thick forest is a small dagoba dug into by thieves. Close by are the remains of an image house where on a slab of stone 6 feet X 2 feet, is an inscription. In the neighbourhood is an asana stone.

Route: To the East of the ferry at Mahaweliganga on the Kantalai-Allai road.



64  
2

Rocky eminence north of the  
hill of Kulankallumalai.

District: Trincomalee.  
D.R.O's Div.: Koddigar Pattu.  
Village: Ilankaiturai.  
Map Ref.: G 9/2.

This is a hillock strewn about with boulders in which there are several drip-ledged caves. Two of these bear inscriptions.

Route: Turn off to the North at the 50th miles on the Valachchanai-Trincomalee road and proceed about 7 miles on the Ichchilampattai-Ilankaturai road.

90  
2

Buriyakulamkanda.

District: Trincomalee.  
D.R.O's Div.: N/Kaddukulam Pattu.  
Village: Periyakulama.  
Map Ref.:

This site is situated in the jungle about 3 miles West of Velgamvehera and has the remains of a dagoba dispoiled by vandals. Near the dagoba is a Yupa stone and east of the dagoba the remains of a pillared structure. There are three caves west of the dagoba two of which contain inscriptions below their drip-ledges. Here also is found an inscribed slab broken in twain.

21  
2

Old Dutch Building at Nilaweli.

District: Trincomalee.  
D.R.O's Div.: E/Kaddukulam Pattu.  
Village: Neelaveliya.  
Map Ref.: D 18/28.

There is a two storied Dutch building in the village of Nilaweli on the Trincomalee-Kuchchaveli road. This building the roof of which had crumbled, has now been conserved by the Archaeological Department.



Appendix II  
Map of Sri Lanka showing demography  
and developmental activities.



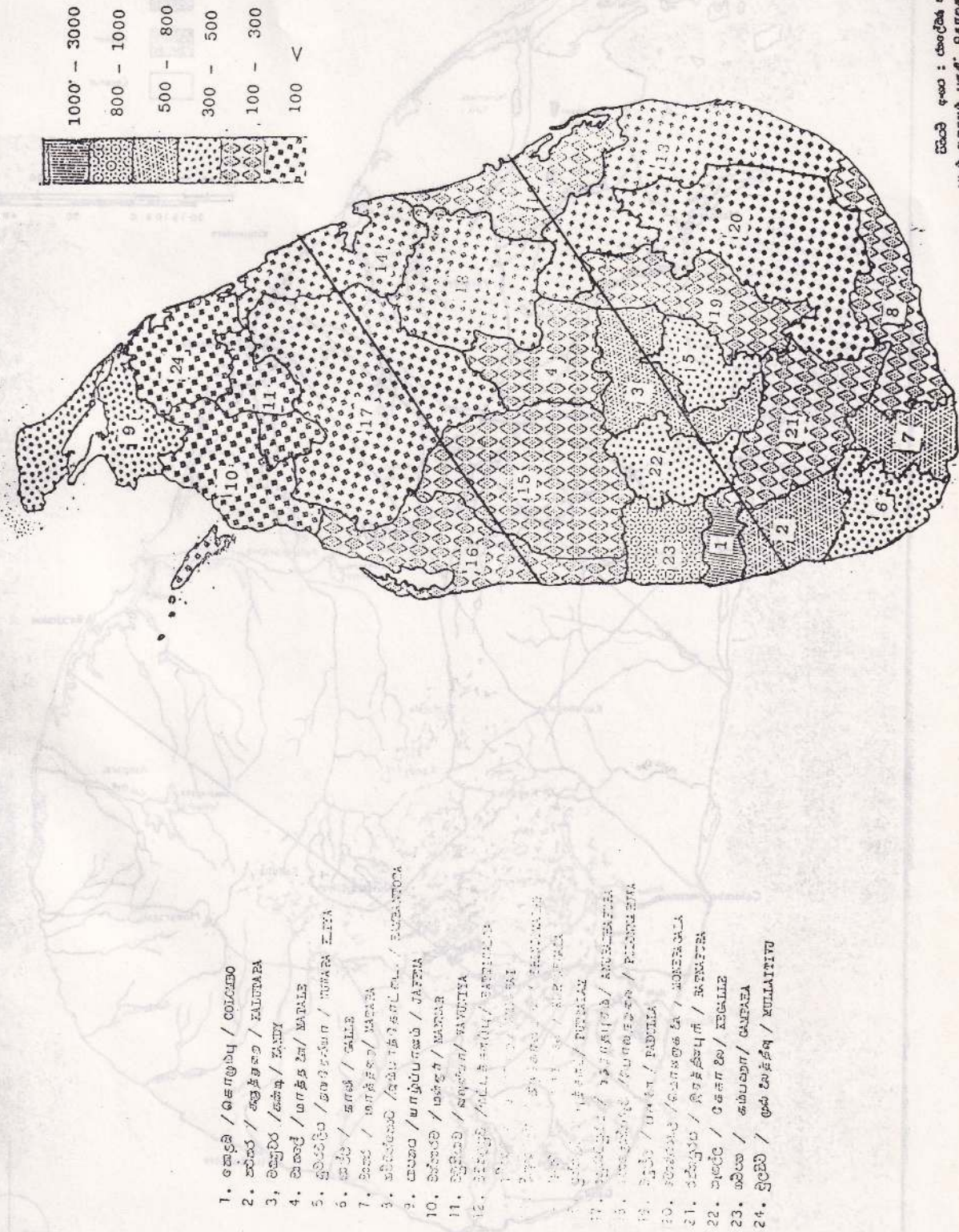
Appendix II

Maps of Sri Lanka showing demography  
and developmental activities.



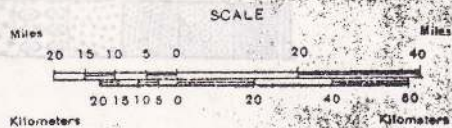
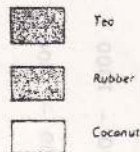
பெரும்பாலும் மாவட்டம் - 1981 ( மாவட்டம் )  
பெரும்பாலும் மாவட்டம் - 1981 ( மாவட்டம் )

Map 1 : Population Density by Districts - 1981 (K.M<sup>2</sup>)





# TEA, RUBBER AND COCONUT LANDS





# AGRICULTURAL PROJECTS



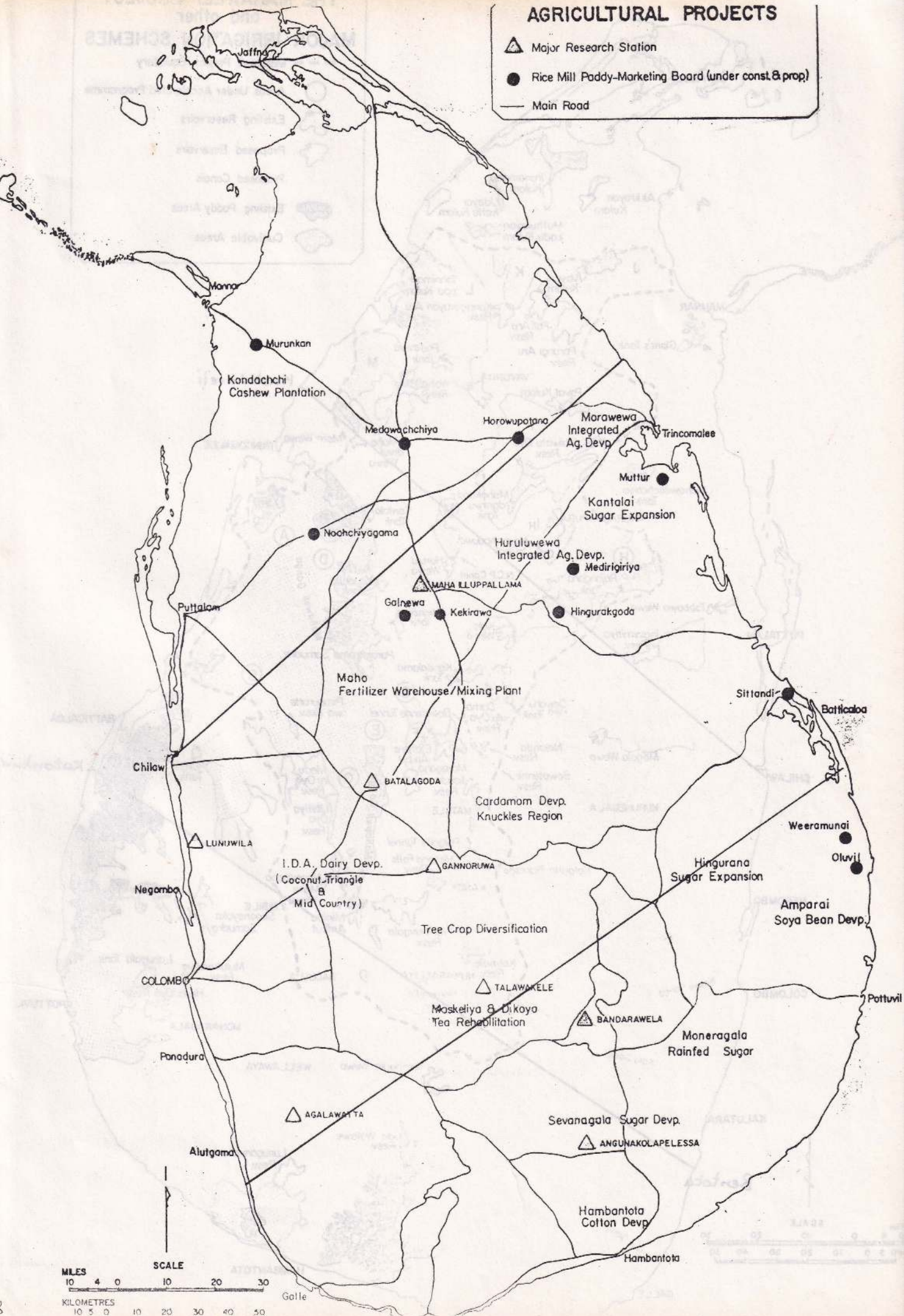
Major Research Station



Rice Mill Paddy-Marketing Board (under const. & prop.)



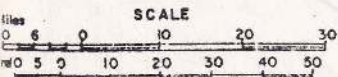
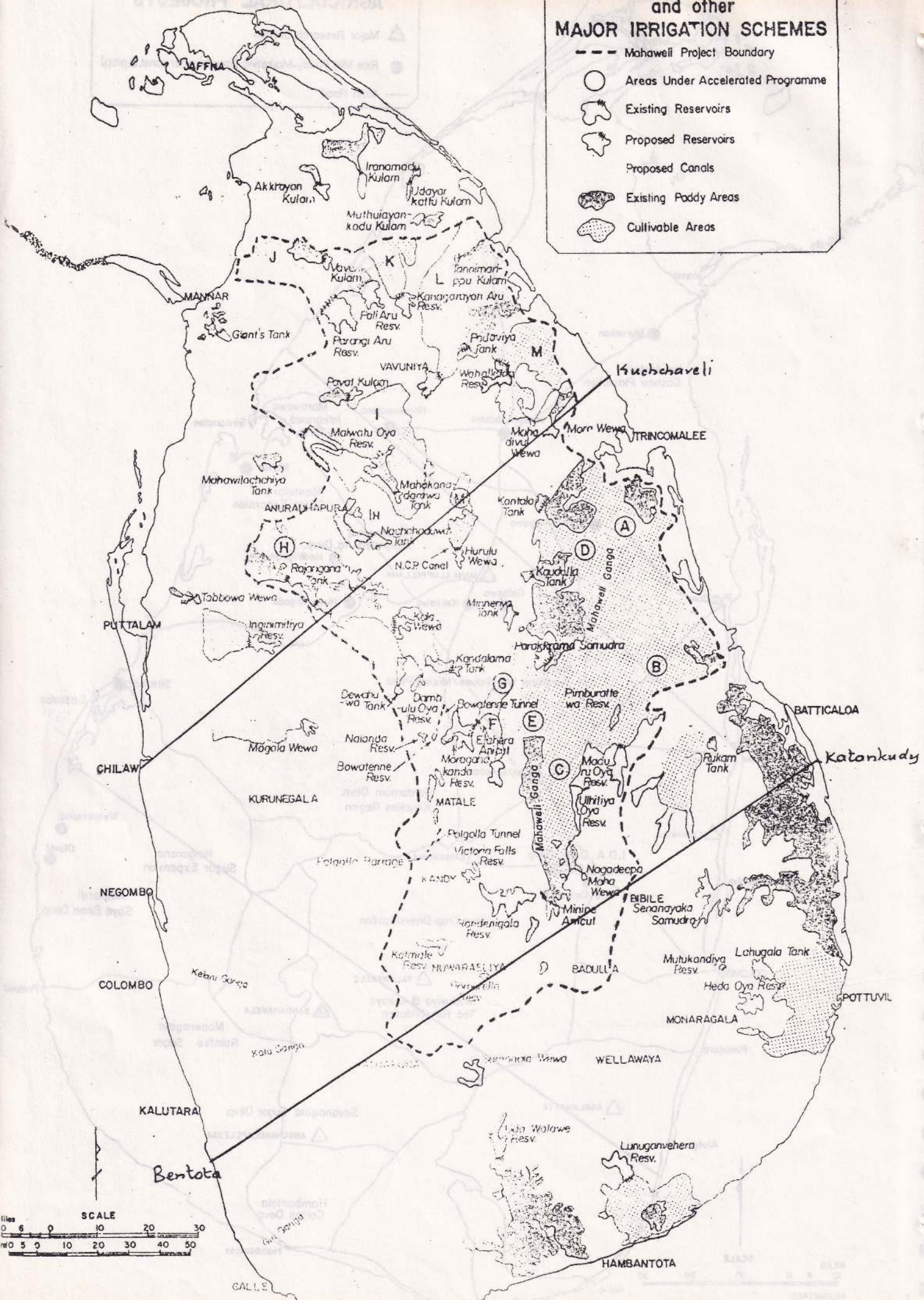
Main Road





# THE MAHAWELI PROJECT and other MAJOR IRRIGATION SCHEMES

- Mahaweli Project Boundary
- Areas Under Accelerated Programme
- Existing Reservoirs
- Proposed Reservoirs
- Proposed Canals
- Existing Paddy Areas
- Cultivable Areas





# FISHERIES.



— Fishery Harbours.



— Existing Ice Plants.



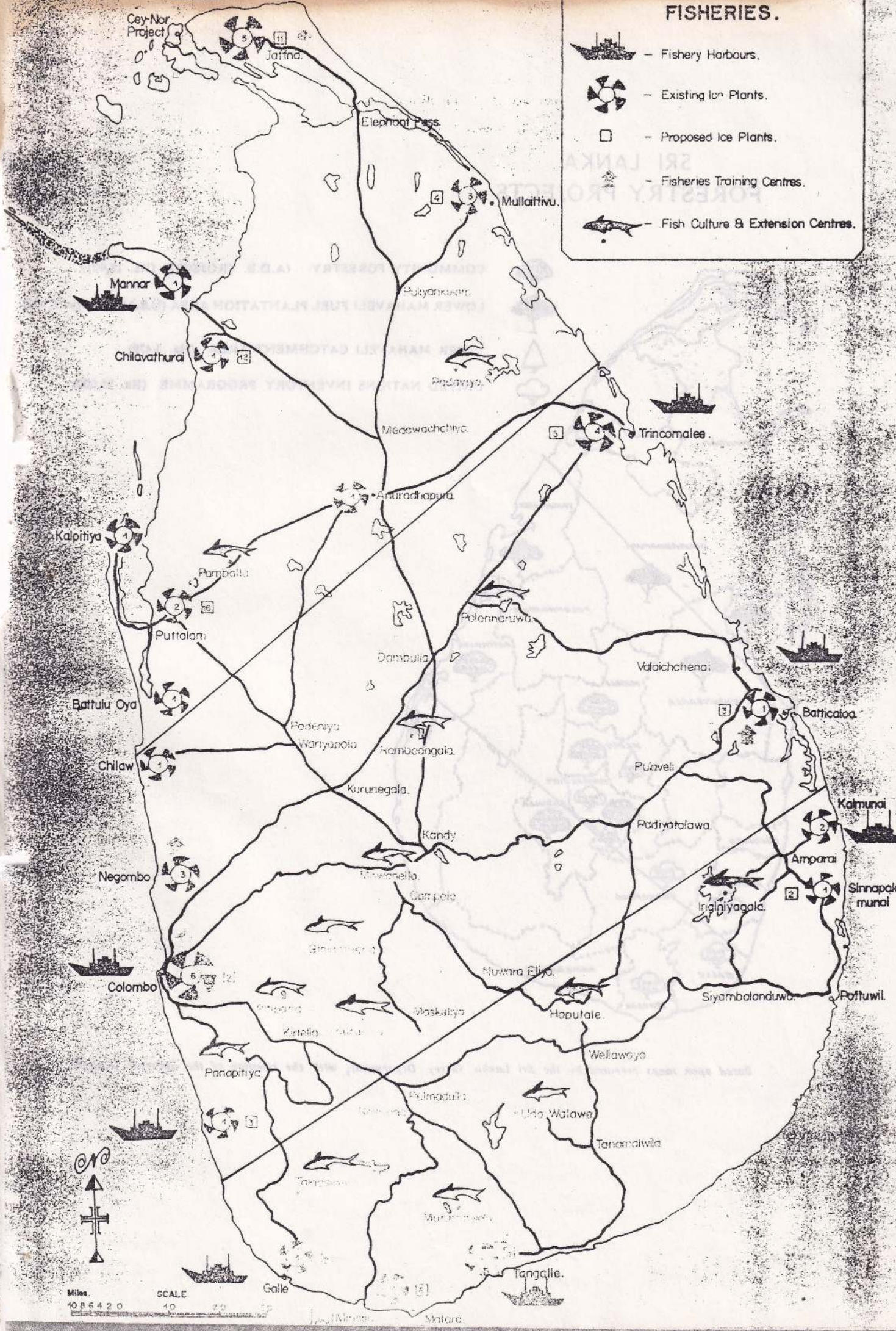
— Proposed Ice Plants.



— Fisheries Training Centres.



— Fish Culture & Extension Centres.



Miles.

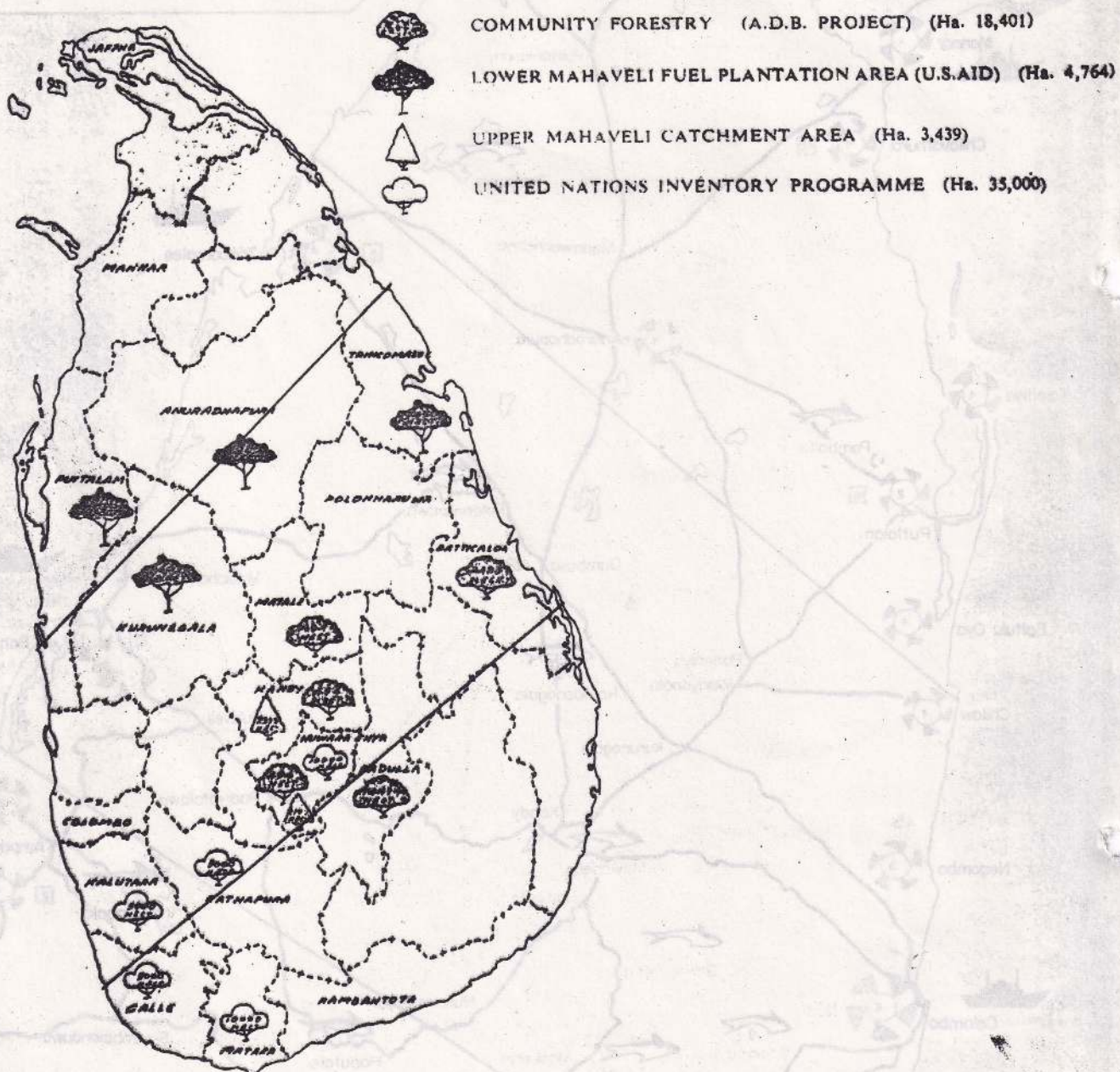
SCALE

10 20 30

1086420






# SRI LANKA FORESTRY PROJECTS

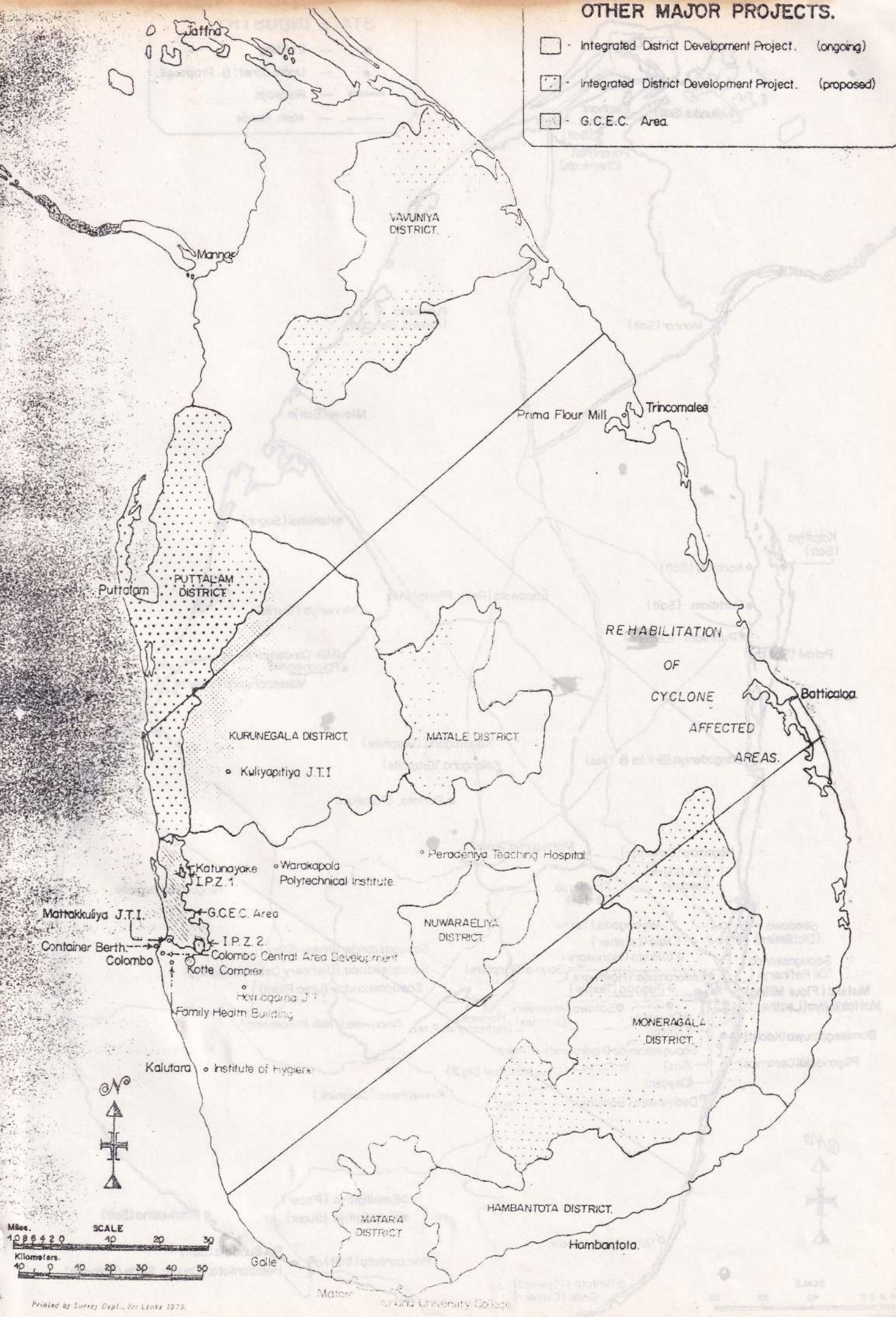


*Based upon maps prepared by the Sri Lanka Survey Department, with the sanction of the Surveyor General.*



# OTHER MAJOR PROJECTS.

-  - Integrated District Development Project. (ongoing)
-  - Integrated District Development Project. (proposed)
-  - G.C.E.C. Area.





# STATE INDUSTRY

- — Existing
- — Under Const: & Proposed
- Railways
- Main Roads



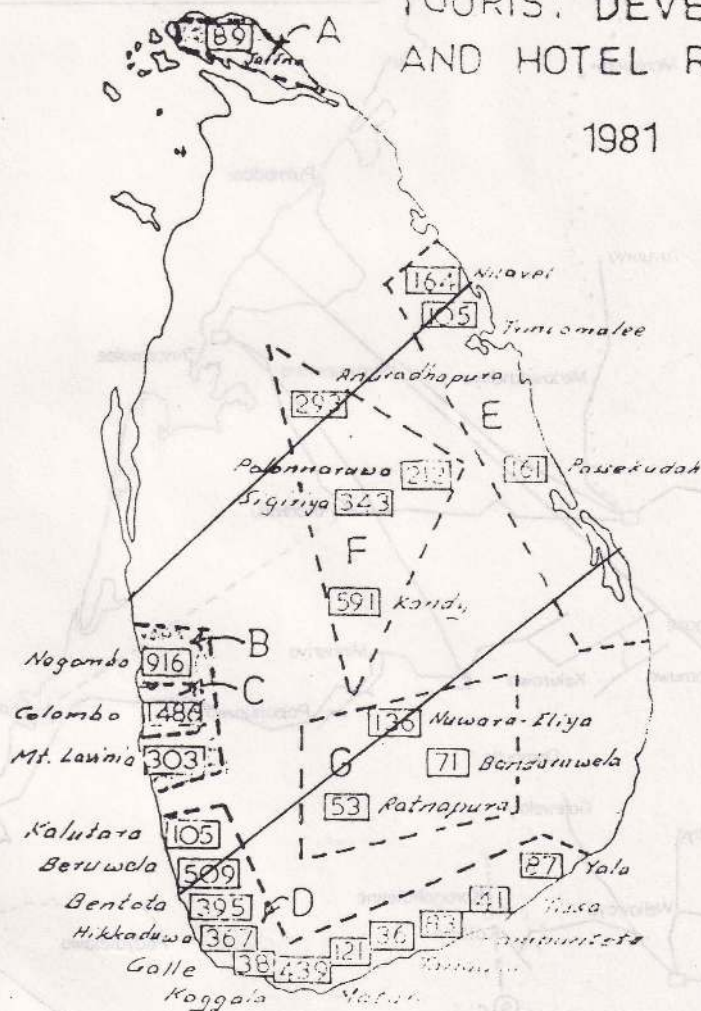
SCALE  
0 10 20 30  
Kilometers



# SRI LANKA

## TOURIST DEVELOPMENT AND HOTEL ROOM CAPACITY

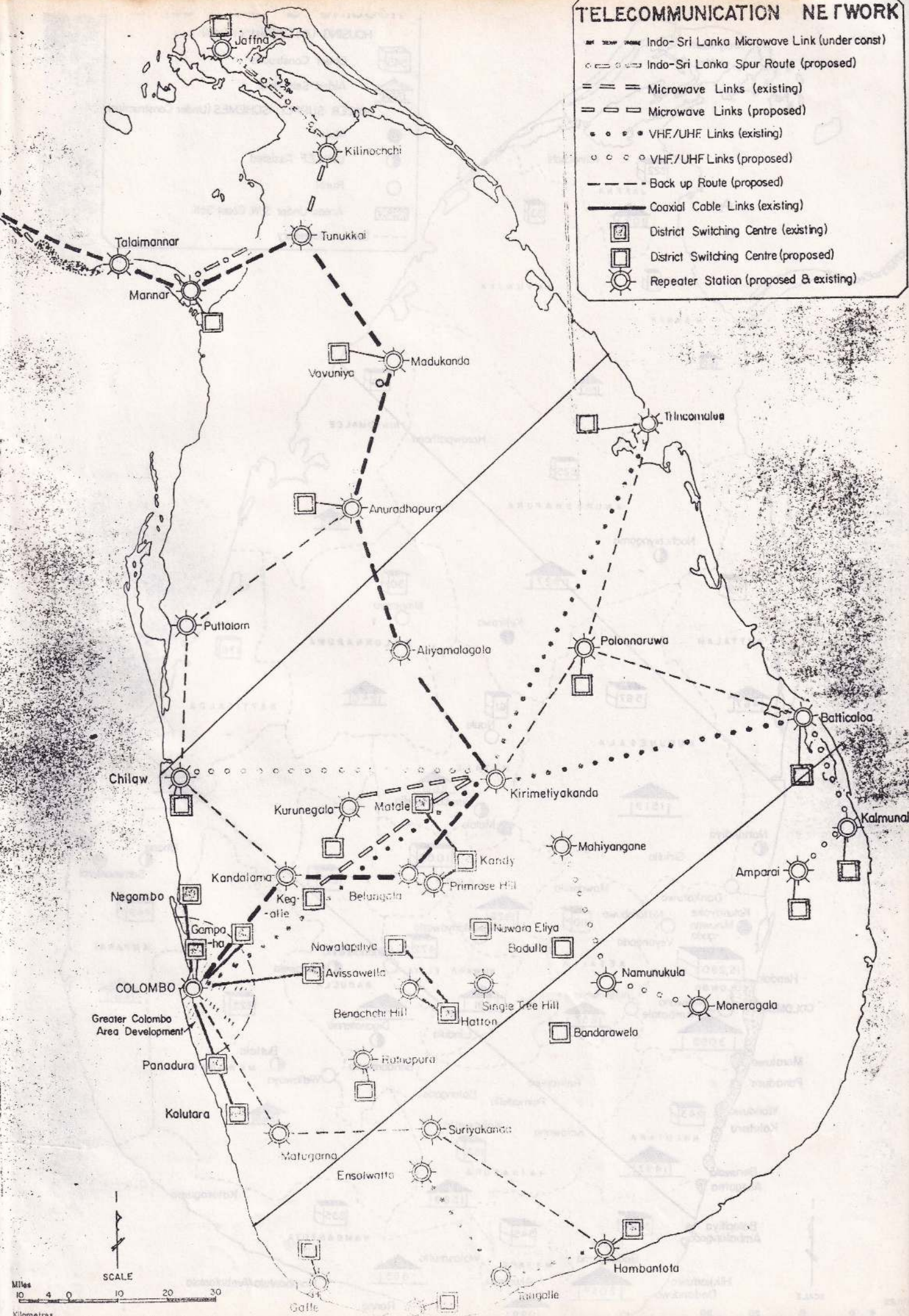
1981



- A** NORTHERN REGION (89)
- B** GREATER COLOMBO RESORT REGION (1219)
- C** COLOMBO RESORT REGION (1486)
- D** SOUTH COAST RESORT REGION (2221)
- E** EAST COAST RESORT REGION (430)
- F** HISTORIC AREAS RESORT REGION (1439)
- G** HIGH COUNTRY RESORT REGION (260)



# TELECOMMUNICATION NETWORK





# HOUSING & WATER SUPPLY

## HOUSING UNITS (District Total)



Direct Construction



Aided Self Help

## WATER SUPPLY SCHEMES (Under Construction)



Major



UNICEF Assisted



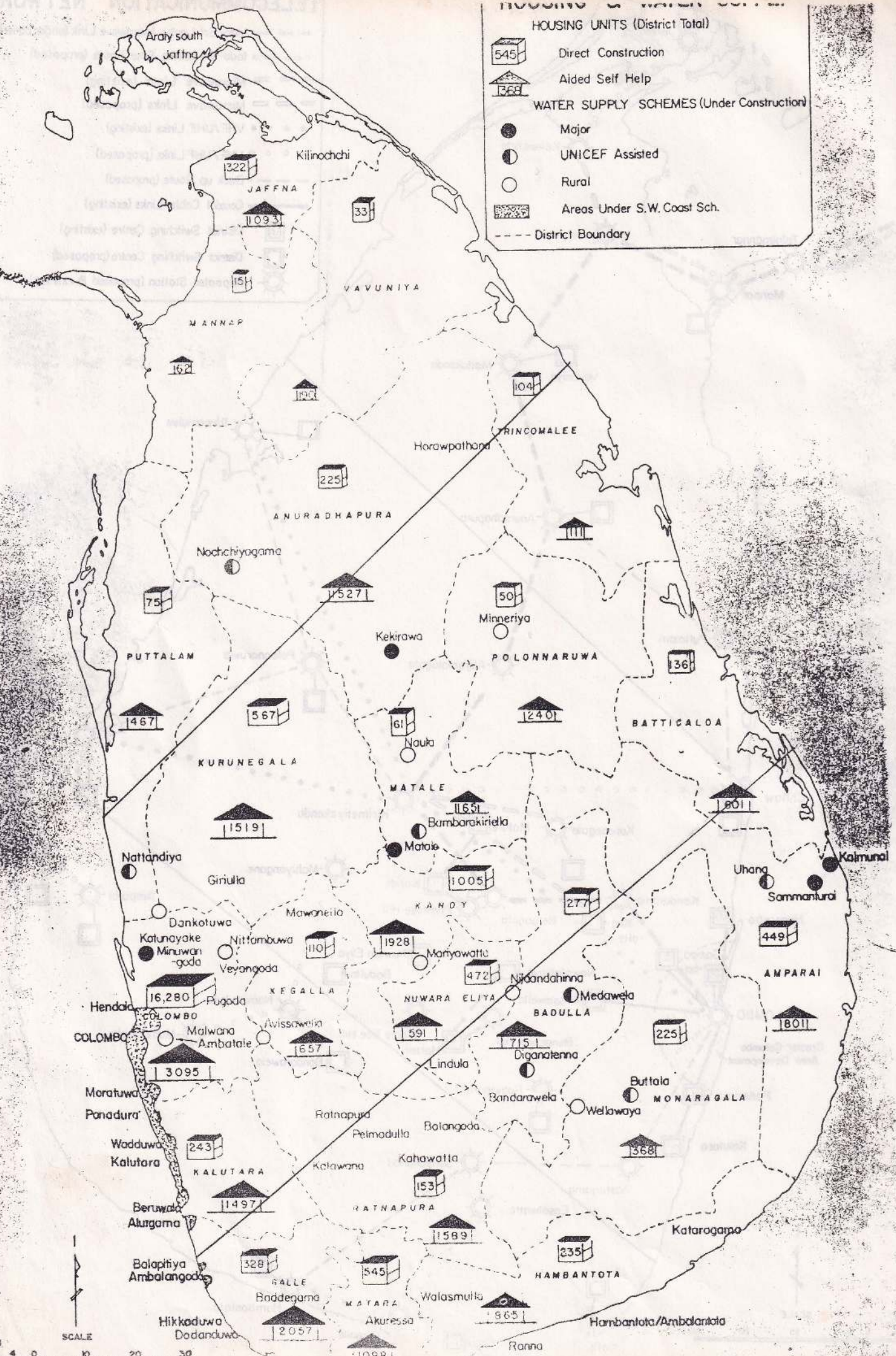
Rural



Areas Under S.W. Coast Sch.



District Boundary











ජාතික ජලජ සම්පත් නියෝජිතායතනය

**NARA**

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Chairman: 590881

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NARA

NATIONAL AQUATIC RESOURCES AGENCY







