The Governments of Malaysia & the State of

Johor tenggara
regional master plan

Hunting Technical Services Ltd.
Binnie and Partners
Overseas Development Group
University of East Anglia
Shankland Cox Overseas

1971

HUNTING TECHNICAL SERVICES LIMITED

A DIVISION OF HUNTING SURVEYS AND CONSULTANTS LIMITED
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The Chief Secretary to the Government of Malaysia,
Prime Minister's Office,
Jalan Dato' Onn,
KUALA LUMPUR.

Dear Sir,

In accordance with the Agreement effective from 1st September 1969 between the Government of Malaysia and Hunting Technical Services Limited we submit herewith the Johor Tenggara Report.

The Report presents the findings of a two year study by the Consultants' consortium which culminated in the preparation of a Master Plan for the coordinated development of the Johor Tenggara Region.

The Master Plan is contained in one volume and is accompanied by further volumes of supporting material and a resources atlas. Additional internal working papers have been prepared and submitted separately on a range of associated subjects.

In accordance with Terms of Reference for the Study a Draft Project Report was submitted. The strategic decisions taken by the Steering Committee for the Study, based on the reports of the Review Groups set up to examine the Draft Project Report, provide the framework of the Master Plan.

The conduct of the studies from which the Master Plan has emerged would have been impossible without the most active and willing co-operation of many official, semi-official and private bodies and individuals. They are listed in the Report and we take pleasure in recording our grateful thanks to them.

Successful implementation of the early phases of the plan recommendations, geared as they are to the timing of the Second Malaysia Plan, requires immediate action:

(a) To establish a Development Authority and, particularly to appoint its senior executives. We commend this to your urgent attention. To add emphasis to this urgency copies of the relevant chapter of the Master Plan have already been submitted in advance.

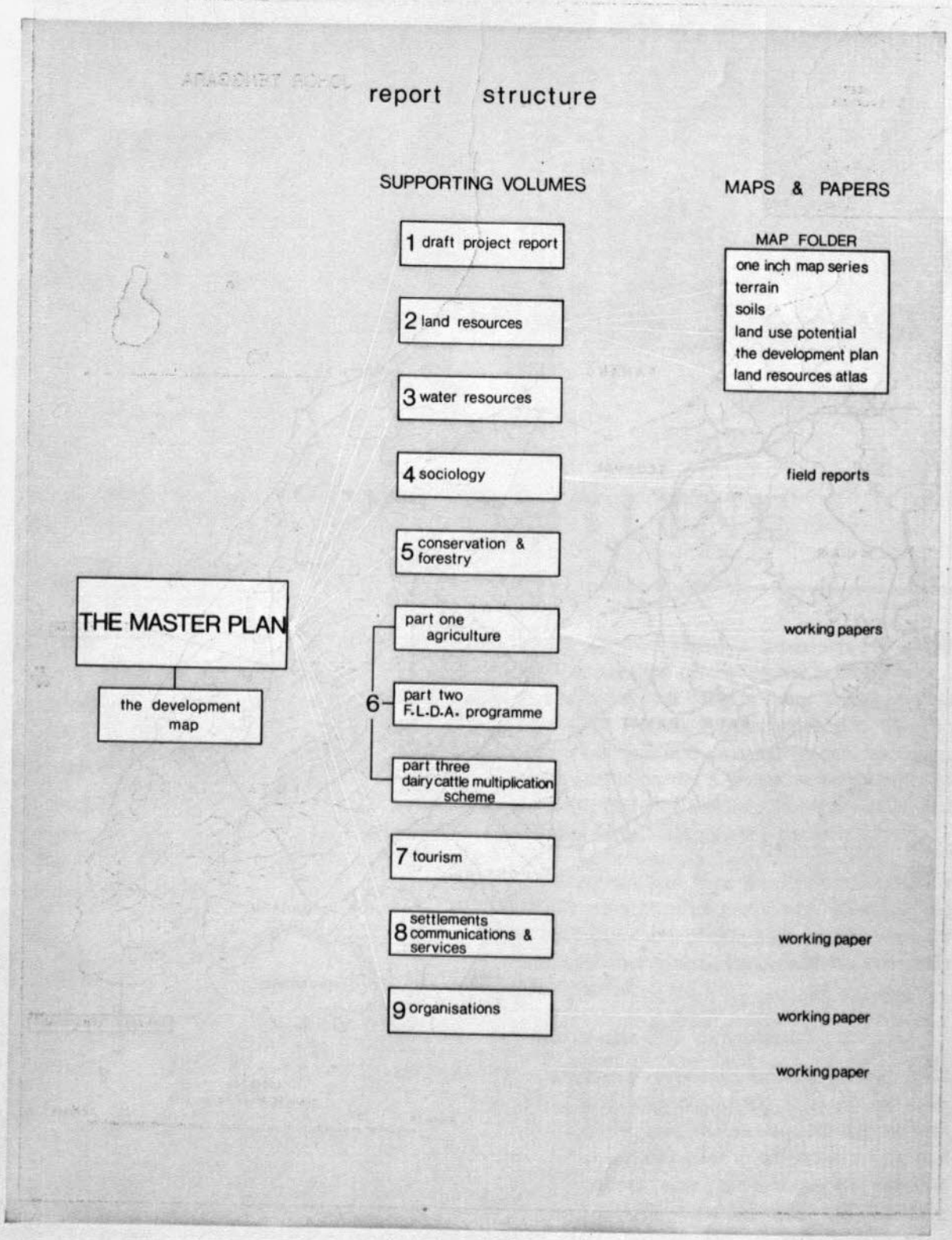
(b) To start the essential design studies and construction for the road programme which will ensure access for development.

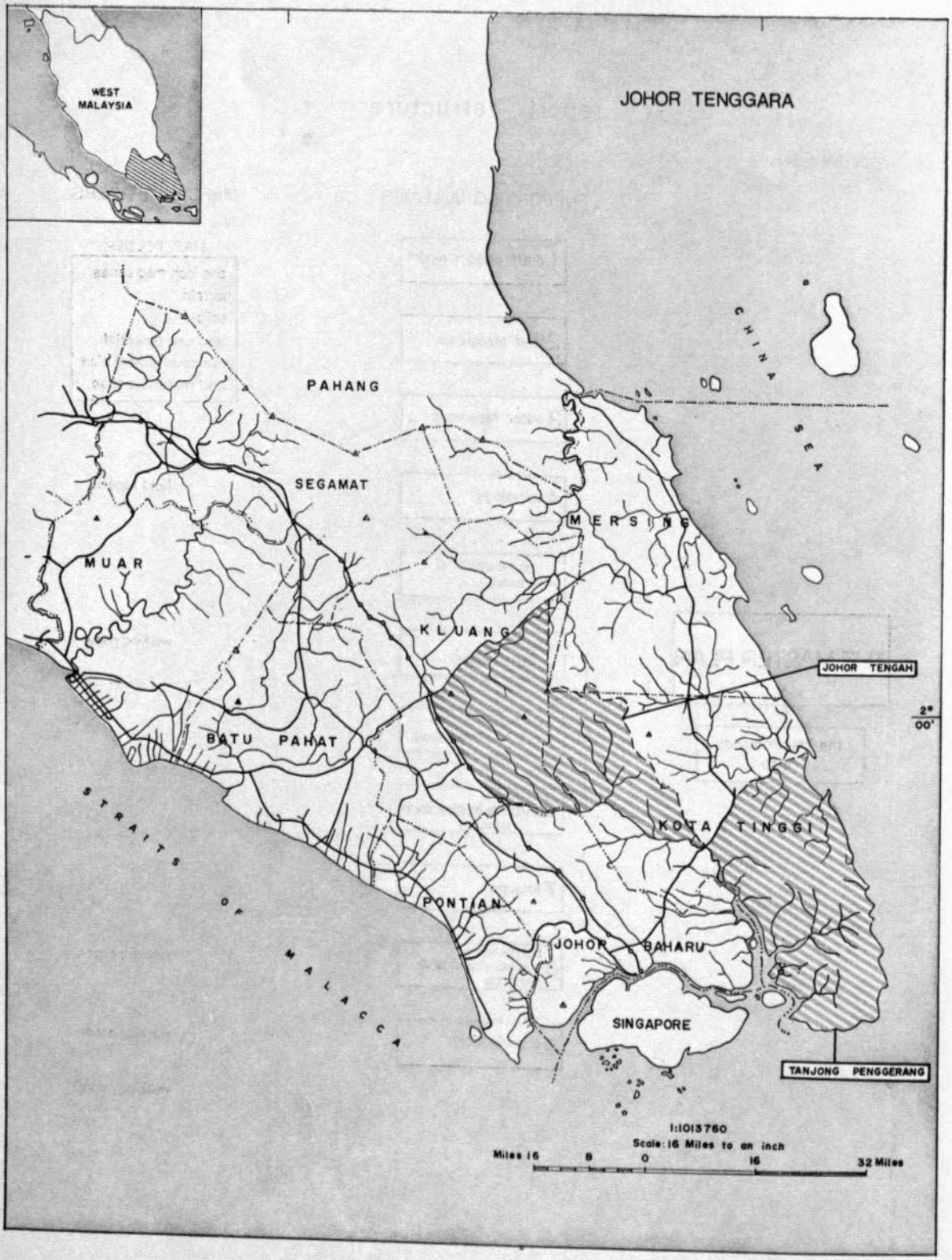
(c) To establish the organisation to log and process timber from Johore Tenggara.

Yours faithfully,

Director
HUNTING TECHNICAL SERVICES LIMITED

report structure




WEST MALAYSIA
JOHOR TENGGARA
CHINA SEA
PAHANG
SEGAMAT
MERSING
MUAR
KLUANG
JOHOR TENGAH
2° 00'
BATU PAHAT
KOTA TINGGI
STRAITS OF MALACCA
PONTIAN
JOHOR BAHARU
SINGAPORE
TANJONG PENGGERANG
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Scale: 16 Miles to an inch
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THE PLAN OUTLINE

Johor Tenggara covers a gross area of nearly 750,000 acres (16 percent of the State of Johor), approximately half being in Johor Tengah Region and half in Tanjong Penggerang Region. The two regions converge at the small town of Kota Tinggi, which stands on the S. Johor, some 30 miles to the north of Johor Baharu, the State capital, and 45 miles from Singapore city centre.

The regions had been previously identified by the Government, after preliminary investigations, as comprising a probable high priority area for development starting in the Second Malaysia Plan (SMP) period.

The Master Plan recommends:

(1) The progressive clearance between 1972 and 1987 of 281,500 acres of less steep forest, and the subsequent development of 249,800 acres to oil palms, rubber and various new agricultural activities, of which the most important will be a dairy

cattle multiplication unit. By 1990 some 14,000 families will have been settled in a rural environment with an estimated average family income of $2,400-3,000 per year. These families will have a range of employment opportunities, facilities and amenities at present available only in towns.

(2) The establishment of an integrated logging and timber complex to obtain maximum value from 71,000 acres of lowland forest standing on future agricultural land and from 21,000 acres in future reservoir catchments. The presently marketable timber from these 92,000 acres will be processed into high value products such as mouldings and pressure-treated and kiln-dried timber. The residual timber will be disposed of as profitably as possible by the same complex as markets develop. The logging programme, which will be phased to fit in with the agricultural requirements, will start in mid-1974 and continue to the end of 1989 at an annual rate of 6,000 acres. The processing complex will receive logs from mid-1975.

(3) The creation of an initial tourist complex on the east coast of Tanjong Penggerang and the reservation of the coast line between Tanjong Siang and Tanjong Punggai for further development depending upon the success of the initial project. When fully developed the central beaches could serve 90,000 people at any one time, and the resort could well be catering for 50,000 overnight visitors, employing 20,000 persons directly in tourism. The resident population would then be around 100,000.

(4) The conservation under forest of (*a*) all land with an average slope greater than 20 degrees; (*b*) land in catchments draining to proposed reservoirs required for certain water supplies; (*c*) land with soils unsuitable for agriculture; (*d*) land containing biological communities of special interest. The acceptance of these recommendations is vital for the protection of the soil and water resources of the Project Area, for the preservation of its wild life (fauna and flora), and for maintaining its amenity value for future generations. Some of the steepland forest may in time be productively utilised but this must await the development of suitable silvicultural and logging techniques.

(5) The building of 30-40 new villages, six larger central villages, a new town in each region and expansion schemes for Kluang and Kota Tinggi, to accommodate a population increase of over 300,000 people by 1990. Of this the population living in the new towns and master villages (the urban population) will be 94,000. These settlements will be located on two new regional road systems and provided with a comprehensive range of social, commercial and public utility services.

(6) Implementation will be under the overall control of a Development Authority. A variety of agencies will be involved so as to provide the population with as wide a choice of employment as possible.

(7) Three matters require immediate action—

(*a*) The commencement of the road construction programme.

(*b*) The appointment of the Chief Executive to the Development Authority.

(*c*) Establishment of an organisation for logging and processing of timber in Johor Tengah.

To ensure that these actions are rapidly implemented it is recommended that a small and informal implementation group be temporarily set up within the Prime Minister's Department upon receipt of this report.

The various leading sector developments and the services and management requirements are more fully described in Chapters 3-10 and in detail in relevant supporting volumes. The Master Plan is illustrated at a scale of one inch to one

mile on The Development Plan maps in the Map Folder. The Project Area has been divided into 50 land units for phasing of the land development programme. The maps show these units, their gross and net acreages, their year of clearing, the activities proposed and the implementing agencies. The phased programmes for these units, for the other leading sectors and for the necessary services are shown in Chapter 9.

MASTER PLANNING BRIEF

The Consultants' task is described briefly in the Agreement and Summary Terms of Reference. They are required "to prepare a comprehensive regional master plan for the economic and social development of the Tanjong Penggerang and Johor Tengah regions. This will consist of a plan of land development and settlement supplemented by subsidiary industries based on the agricultural production to be developed and on the economic utilization of the indigenous forest resources and other related activities in accordance with the specific objectives". These were set out in Schedule A to the Agreement. (The Scope of Work, summarised in Annex B) The Consultants were required to submit a draft report which was to make broad recommendations for the development of regions consistent with overall government social and economic goals and outline alternate strategies for development and their broad economic implication.

The Draft Report was submitted on 29th January 1971 in accordance with the requirements of the Scope of Work. (Detailed recommendations of the Draft Report are in Annex. C in this volume). It is included among the Master Plan documents as Supporting Volume 1.

Arising from discussions and review of this report the Steering Committee issued the Consultants with an instruction brief for master planning.

The brief contained instructions (Annex. D) on a wide range of planning aspects. Parts of the brief which required significant changes in the outline master plan set out in the draft report can be summarised as follows:—

(*a*) the proposed timber processing complex should be fully integrated with the logging programme and only about 30 percent, all as plylogs, should be disposed of to existing industry.

(*b*) No premature innovations should be made in respect of settlement patterns and settler participation in management of various land development schemes.

(*c*) The strategy providing for 75 percent public and 25 percent private participation was accepted. However in respect of the recommendation as to full time work, implementation should be phased and accommodated to the overriding need for rapid development through the agency of the Federal Land Development Authority (FLDA).

(*d*) Alternative proposals on the form and control of the implementing and controlling agency should be submitted for consideration by State and Federal Governments. All must be State controlled and at the same time safeguard the vital interests of the Federal Government.

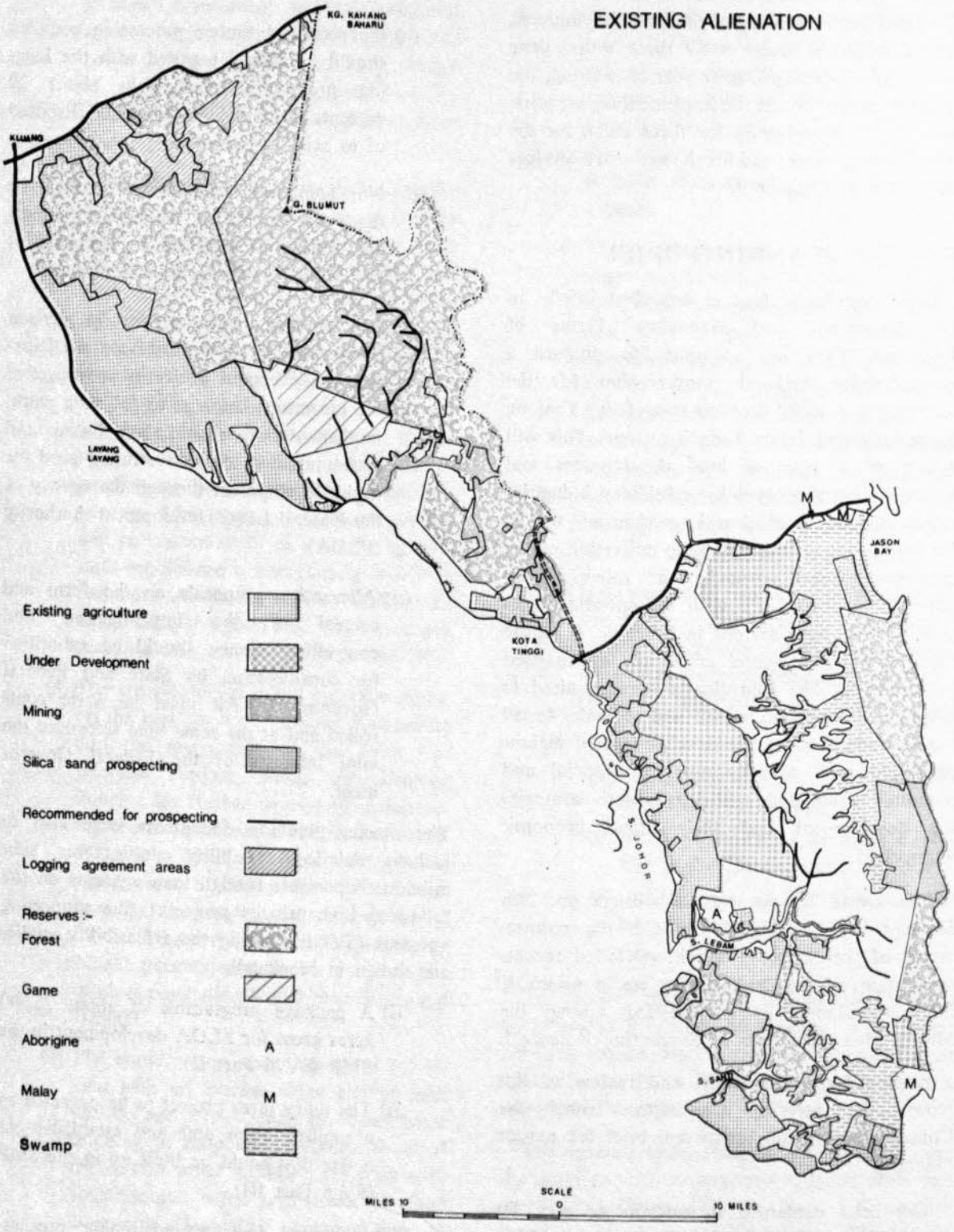
The master planning documents were also to include detailed feasibility studies for submission to possible foreign loan agencies on the following high priority projects: (the supporting volumes (SV) containing these feasibility studies are shown in brackets).

(i) A package programme of about 75,000 acres gross for FLDA development in the SMP (SV 6 Part II).

(ii) The dairy farm project to be operated as a multiplication unit and established at a size that could be built up in the SMP (SV 6 Part III).

(iii) Integrated logging and timber processing project (SV 5 Part I).

EXISTING ALIENATION



PRESENT DEVELOPMENT OF THE PROJECT AREA

About two-thirds (518,000 acres) of the gross area is covered by primary and secondary forest. About half the forest area is undisturbed and the remainder has either been exploited or is currently being logged. In Tanjong Penggerang most of the undisturbed forest is found in swamps and is unexploitable. In Johor Tengah nearly two-thirds of the forest is undisturbed, most of it in a compact block in the centre and north of the region.

About 175,000 acres of land have been or are in the process of being developed, mainly under rubber and oil palms. In Johor Tengah some 60,000 acres have been developed round the north and west perimeters. In Tanjong Penggerang there are some 70,000 acres developed on the west coast facing the S. Johor and between 40,000 and 50,000 acres are in the course of development by FLDA south-east of Kota Tinggi.

Some 22,000 acres of land have been worked for minerals, mainly tin in Johor Tengah, and tin and bauxite in Tanjong Penggerang, where sporadic occurrences of high grade silica sand are also being worked on the south-east coastal strip.

The present water resource developments in Johor Tengah consist of the major water supply intake (present capacity 30 mgd) for Singapore on the S. Johor, and small Public Works Department (JKR—Jabatan Kerja Raya) water supply intakes serving Kluang, Rengam, Layang Layang and Kota Tinggi. There are also minor schemes for estate supplies.

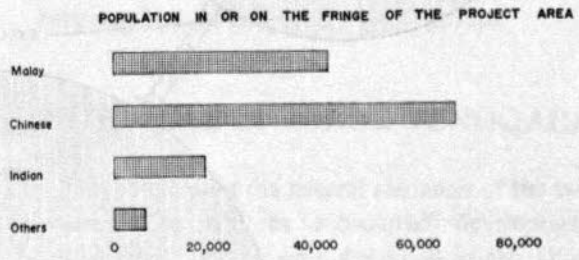
The present water resource developments in Tanjong Penggerang consist of minor schemes for estate supplies and small communities and a JKR scheme for Penggerang village. JKR are also constructing two schemes to supply the new FLDA projects at Ayer Tawar and Bukit Aping.

The Project Area is served by a network of Federal and State roads which has adequate capacity for existing development. There is access to the Singapore-Kuala Lumpur railway at four points close to the area. All other public utilities and services are available with varying degrees of adequacy in respect of existing development.

The developments proposed will demand substantial expansion in the network of communications and public utilities and services.

THE EXISTING SOCIETY

The 1970 pre-census estimates indicate that about 135,000 people (nearly 10 percent of the population of Johor State) live within and on the fringes of the Project Area. This population includes three small settlements of Orang Asli.

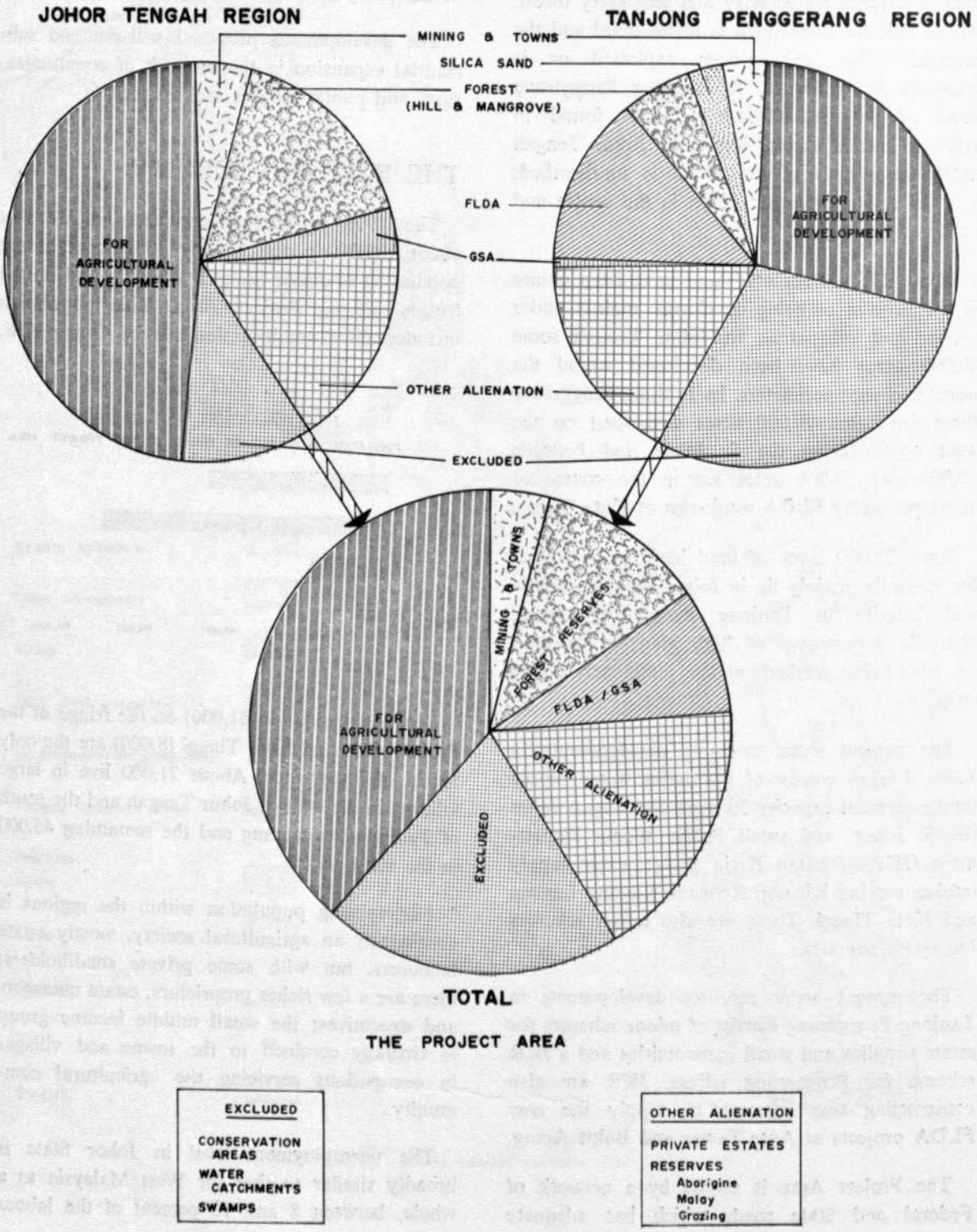


Kluang (population 61,000) on the fringe of the Project Area and Kota Tinggi (8,000) are the only towns of importance. About 21,000 live in large villages in the west of Johor Tengah and the south of Tanjong Penggerang and the remaining 45,000 in the rural areas.

The existing population within the regions is dominantly an agricultural society, mostly estate labourers, but with some private smallholders; there are a few richer proprietors, estate managers and executives; the small middle income group is virtually confined to the towns and villages in occupations servicing the agricultural community.

The unemployment level in Johor State is broadly similar to that for West Malaysia as a whole, between 8 and 10 percent of the labour

PRESENT LAND USE



force. About half of the 40,000-50,000 unemployed are aged between 15 and 20 and another 20 percent are between 20 and 25. In the SMP about 20,000 school leavers are being added every year to the potential labour force.

The agricultural industry, if not the sole employer, is certainly the largest prospective employer; however employment in agriculture has a low popular appeal, particularly among young people. First, there is the lack in rural areas of many of the attractions to be found in towns, such as electricity, piped water, education, sports facilities and choice of employment. Second, much of the routine work in the cultivation of oil palms and rubber is uninteresting and involves considerable drudgery. Third, there is a lack of security and a loss of independence in being an estate worker, and for the vast majority, little likelihood of improving their future social and economic status. The only young men who seem to be predisposed to agriculture are those whose parents have experienced considerable security, some independence and at least the prospect of high incomes from farming; these are mainly sons of FLDA settlers.

The average size of a Malay smallholding in a survey of 706 Malay farmers carried out by the Consultants in South Johor was only 4.6 acres. Such a small farm does not provide an adequate family income or fully employ the average family labour, and a typical Malay family earns more cash income outside its farm than on it. Thus, in places where unemployment is high and opportunities for self employment or for obtaining jobs outside agriculture are few, there is acute poverty and high underemployment.

The present average wage on estates appears to be about $130 per month (including the typical value of fringe benefits). The adequacy of the family income is therefore dependent on the number of family members working on the estate or in alternative employment.

OBJECTIVES

The main objectives of the New Economic Policy (NEP) to be adopted in the SMP have been outlined by the Government and provide the framework for the Master Plan. They are, in descending order of importance,

(*a*) reduction of economic disparities

(*b*) creation of employment opportunities

(*c*) promotion of overall economic growth

These objectives, though applying at present to the SMP only, have been assumed to apply also, but perhaps with changing emphasis, over the whole period covered by master planning.

The first objective has been taken to mean, in general, the reduction of disparity in incomes between rich and poor and within this, specifically, the redressing of economic imbalances between Malays and other ethnic groups.

POTENTIAL OF JOHOR TENGGARA

The potential of the natural resources of the two regions give rise to substantial development opportunities. These were described in the Draft Report and occur mainly in the fields of water, forestry, agriculture and tourism.

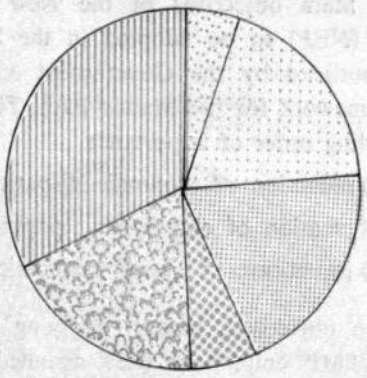
WATER

The natural river flows in the Project Area are adequate to meet present and likely future demand. Availability of water to meet any likely future demand from both inside and outside the area can be achieved if some of the potential reservoir sites are developed.

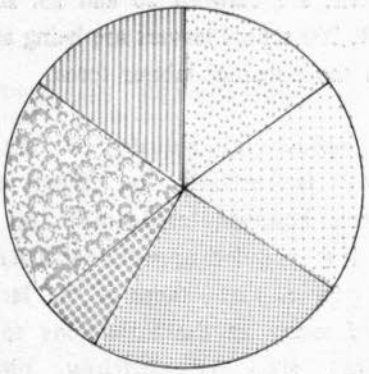
FORESTRY

Johor Tengah has 119,000 acres of lowland dipterocarp forest, containing 2.4 million Forestry Department (FD—One FD ton contains 57 cu. feet) tons of timber which can at present be classified as marketable. Tanjong Penggerang has no such timber.

LAND USE POTENTIAL



JOHOR TENGAH REGION

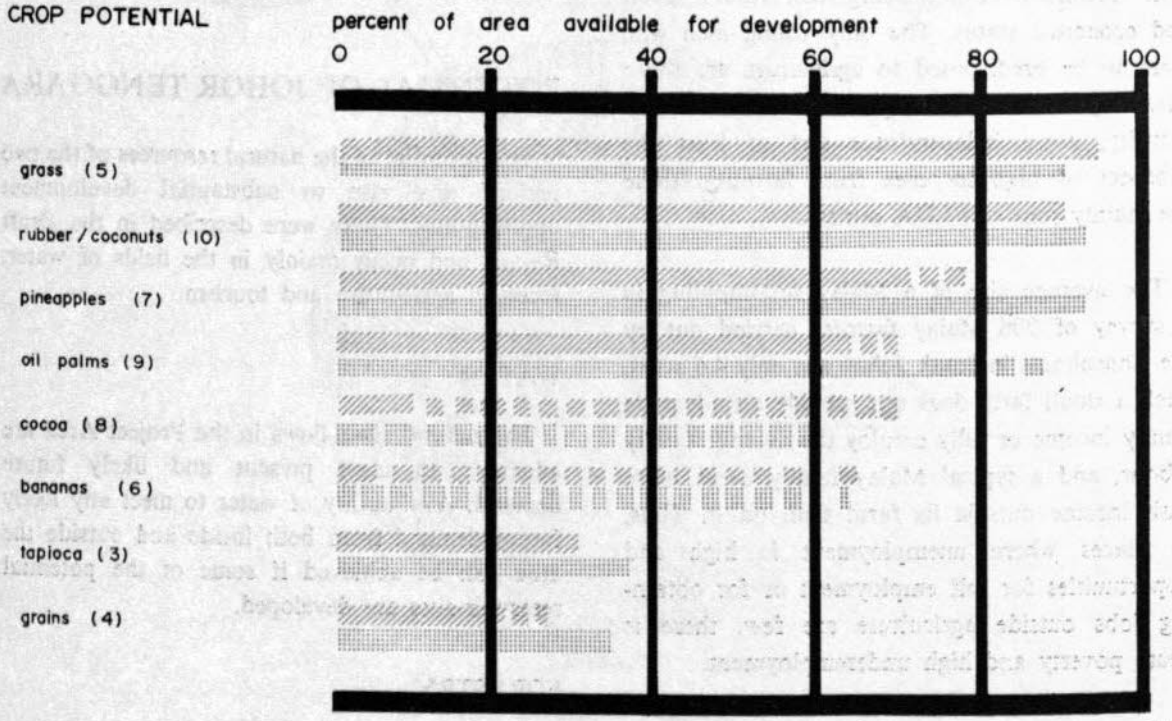


TANJONG PENGGERANG REGION

annual & semi perennial
annual s-p perennial
semi-p & perennial
perennial
forest
existing development

Based on acreages taken from the 1:63,360 Land Use Potential maps

CROP POTENTIAL



JOHOR TENGAH
TANJONG PENGGERANG
broken line indicates marginal potential

Crops are a representative selection only and cover the main groupings.
Figures in brackets refer to the crop codings used for the 1:63,360 Land Use Potential map series

Both areas have about 30 FD tons per acre of residual timber. This is either small stemmed timber, or large timber of currently unacceptable species. Markets of the scale needed for these volumes have yet to be identified. Chipping for board manufacture appears to be one promising outlet.

In Johor Tengah there are also 65,000 acres of hill forest which contain about 23 FD tons per acre of marketable timber. Before even the marketable timber is extracted logging methods in hill forest areas need to be found which are not a soil conservation hazard. The residual timber (21 FD tons per acre) should not be extracted for reasons of soil conservation.

The setting up of a public sector organisation to exploit most of the timber would provide good opportunities for involving Malays in the timber industry. There also appears to be a large potential market to be developed in high value-added timber products, which could be exploited by such an organisation.

AGRICULTURE

After excluding land for various reasons 281,500 acres are suitable for agricultural development. A further 45,000 acres, either inaccessible or subject to flooding of an unknown pattern, may be brought under development when access constraints have been removed or the flooding status and pattern ascertained. Most of this land is suitable for many new agricultural activities and types of enterprise as well as for rubber and oil palms. For early development, i.e., during the period of the SMP, market, technical and institutional constraints limit the extent of new agricultural activities. Consequently development in the next decade, especially during the SMP will have to remain predominantly in rubber and oil palms and be carried out in the main by FLDA and other proven agencies.

However the development of an improved cattle industry in Johor with emphasis on fresh milk production is a new activity of particular promise. The area is well placed for the introduction of a nucleus development providing (1) many high grade breeding stock and (2) the training and expertise necessary to the development of the industry in Johor. There is a wide range of other activities which are promising. However their early development must be limited or on a research scale only. These activities include the production of hybrid strains of coconut palms, tapioca, fruit and vegetables, fish from freshwater ponds, small livestock and annual field crops.

For at least the next 10-15 years oil palm and rubber production can contribute substantially to the second and third NEP objectives of employment and growth and to the first objective of reduction of general economic disparities. It is however doubtful if, beyond this time, either should be regarded now as future "high income" activities in which Malays should be especially encouraged to participate now on a permanent and eventually independent basis.

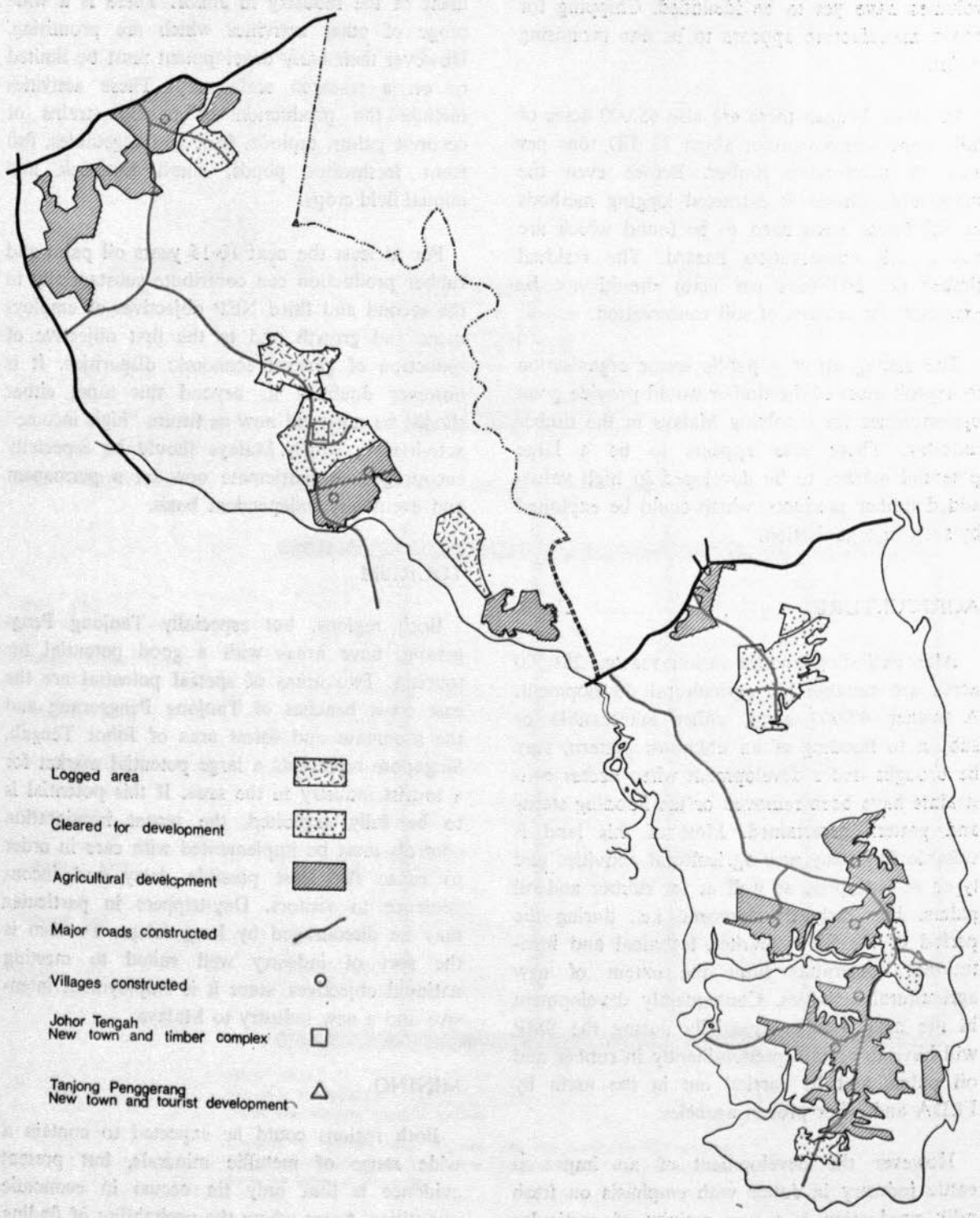
TOURISM

Both regions, but especially Tanjong Penggerang, have areas with a good potential for tourism. Two areas of special potential are the east coast beaches of Tanjong Penggerang and the mountain and forest area of Johor Tengah. Singapore represents a large potential market for a tourist industry in the area. If this potential is to be fully exploited, the recent immigration controls must be implemented with care in order to cause the least possible delay and inconvenience to visitors. Day-trippers in particular may be discouraged by long delays. Tourism is the sort of industry well suited to meeting national objectives, since it is employment intensive and a new industry to Malaya.

MINING

Both regions could be expected to contain a wide range of metallic minerals, but present evidence is that only tin occurs in economic quantities. Areas where the probability of finding

SECOND MALAYSIA PLAN DEVELOPMENT



economic quantities is considered to be highest have been identified in Chapter 6.

There are two possible bauxite deposits on alienated and developed land in Tanjong Penggerang; the potential of the existing silica sand area is not known, but large deposits seem to be unlikely.

The areas designated as most promising should be prospected at an early date, especially in proposed reservoir areas. Agricultural development should not be delayed on account of prospecting licences having been issued.

INDUSTRY

At present the Project Area has no special potential for industry other than that required to service and support foresty, agriculture and tourism. There are strong arguments in favour of deliberately promoting the establishment of industry in the immediate future in Johor Baharu and in other highly populated areas with developed housing and communications and with large scale unemployment, such as Pontian, Batu Pahat and Muar.

However by the 1980's unemployment may become a major problem in the project regions as a result of the expansion of the labour force from the early settler families. Provision for a later expansion of industrial activity may therefore be necessary in the preparation of longer term plans. The industries that might develop in this way are those such as fractionation of palm oil; palm kernel crushing; soap manufacture; manufacture of crates for crumb rubber; animal feedstuff manufacture; starch extraction from tapioca flour; tanneries; leather goods manufacture; bone meal manufacture; glue production; manufacture of particle board and laminated strips.

There will be substantial opportunities for industries supporting the leading sectors particularly for (i) rubber and oil palm processing as well as for (ii) transport, construction, and vehicle repair and maintenance. The latter group will tend to concentrate particularly in Kluang, Kota Tinggi and the new towns.

DEVELOPMENTS DURING THE SECOND MALAYSIA PLAN

The Master Plan provides that during this period:

(1) 102,750 acres of new land will be cleared for planting in the Project Area.

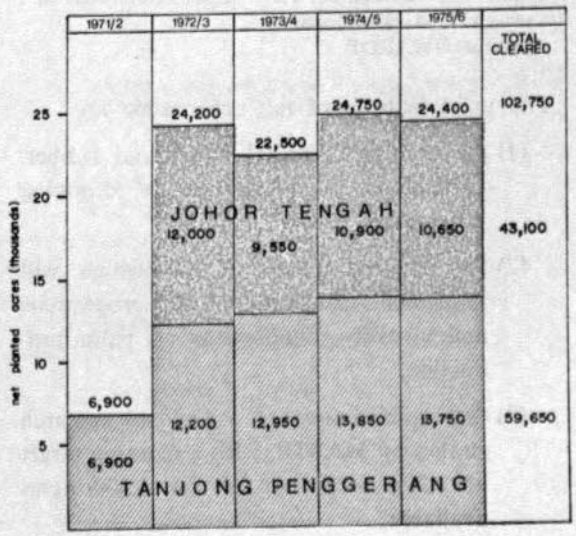
(2) a logging programme of 6,000 acres a year will start from mid-1974, to feed the integrated timber complex from mid-1975 onwards.

(3) a small tourist project will be planned in detail and partially constructed on the east coast of Tanjong Penggerang between Tanjong Balau and Tanjong Penawar.

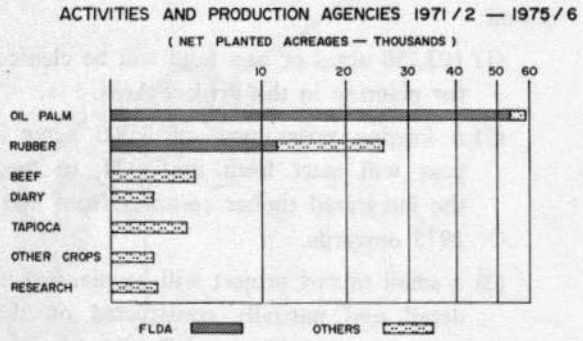
LAND DEVELOPMENT

Clearing operations are scheduled from 1st October to 30th September in each year. In the period of mid-1974 land clearance is carried out on land already logged out. After that time the clearance programme is phased to follow logging operations.

CLEARANCE PROGRAMME 1971–1975/6



The assumed activities, by production agency and region, are as follows:



Other agencies could include:

Federal Land Rehabilitation and Consolidation Authority (FELCRA)	5,900 acres rubber.
Group Settlement Act (GSA) and individual private alienations	7,350 acres rubber and other crops.
Nucleus estate type organisations	9,100 acres oil palm, tapioca, fruit and vegetables.
State Economic Development Corporation (SEDC)	7,800 acres beef and rubber.
Dairy Multiplication Unit	2,200 acres dairy cattle.
Malaysian Agricultural Research and Development Institute (MARDI)	2,200 acres research.

The main features of the programme are:

(1) the dominance of oil palms and rubber, particularly the former, in the cropping programme.

(2) the dependence on FLDA, which will implement two-thirds of the programme and virtually monopolises oil palm production.

(3) the establishment of a regional research station by MARDI, with a planting target of 2,200 acres out of the 4,000 acres available.

(4) the establishment and development of a dairy cattle multiplication unit.

(5) the development of beef and tapioca enterprises in Johor Tengah and of vegetable and fruit production near the initial tourist project in Tanjong Penggerang.

The location of the above activities is largely determined by the availability of suitable agricultural land, especially of land well fitted for FLDA settlement, which as far as possible should be easily and equitably divisable into small holdings. Much of the lowland forest in Johor Tengah has to be logged over before agricultural development can begin. Other areas are still being worked under logging licences, and others again are recommended for mineral prospecting. Finally, access constraints, particularly in Johor Tengah, rule out the early development of many areas.

FOREST LOGGING AND TIMBER COMPLEX

Logging of the 92,000 acres for the timber complex is scheduled to start in mid-1974; working at the recommended rate 9,000 acres will be logged by the end of the SMP period.

The main task in the SMP period will be to establish the timber processing complex. Details of the type of organisation must be settled by the end of 1971 if the processing of timber is to start by mid-1975 and be in full production in 1976.

TOURIST COMPLEX

Detailed planning should begin in 1972 for a tourist project on the Tanjong Penggerang coast to cater for 1,000 overnight visitors. A hotel complex, providing three grades of accommodation and a range of indoor and outdoor recreational facilities, and located between Tanjong Balau and Tanjong Penawar, is proposed. It is recommended that an experienced, professional team be appointed to prepare the detailed plan to provide the bases for negotiation with potential developers and for architectural and engineering

design. Construction of the complex has been assumed to start in 1974 and to be 60 percent complete by the end of the SMP period.

SETTLEMENT, COMMUNICATIONS AND SERVICES

The leading sector programmes will demand the construction in the SMP of 198 miles of primary and secondary roads and two major bridges. The crossing of the S. Sayong must be completed by mid 1973. It will also be necessary to build 13 villages and 3 central villages with associated water supply schemes, and to start the construction of a new town in Johor Tengah in which to locate the timber complex and new agricultural processing plants. By 1975 this new town could well have a population of 4,000.

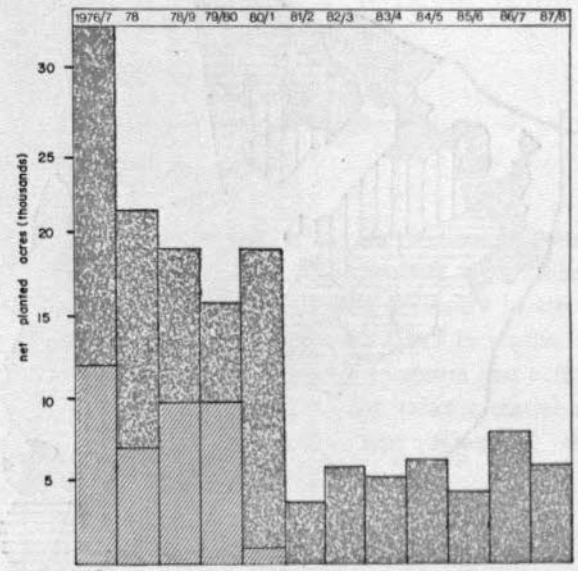
DEVELOPMENTS AFTER THE SECOND MALAYSIA PLAN

The logging programme will continue at the rate of 6,000 acres per year, and will be completed in the agricultural area by mid-1986. Thereafter until the end of 1989 the 21,000 acres in the proposed reservoir catchments will be logged. Beyond 1989 continued operation of the timber processing complex will depend on supplies of logs from the hill forests of the Project Area and from outside sources.

The initial tourist project will be completed in 1976 and opened to visitors. Although it is not possible to predict accurately how fast the tourist resort will develop, it is confidently expected that the results of the initial project will encourage further investment between Tg. Siang and Tg. Punggai on the coast of Tanjong Penggerang. At the medium growth rate assumed a little less than half of the ultimate capacity of the beaches would be developed by 1990, and the resident population would be some 45,000 persons.

Land clearance and development will continue as follows:

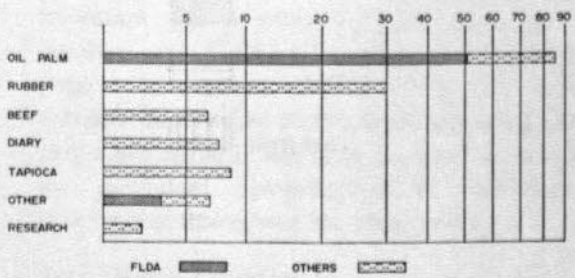
CLEARANCE PROGRAMME 1976-88



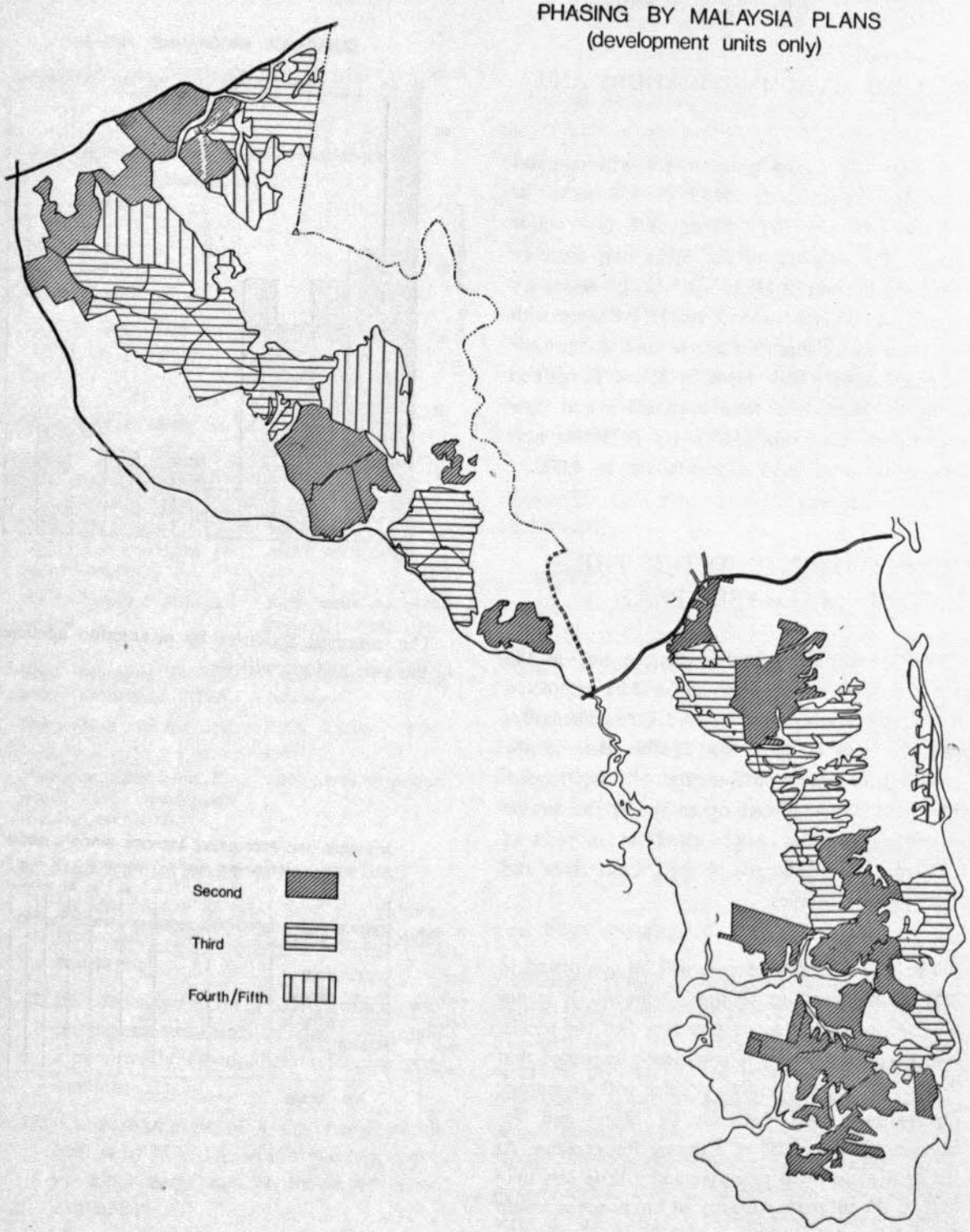
The assumed activities by production agencies in the two regions will be

ACTIVITIES AND PRODUCTION AGENCIES 1976/7 – 1987/8

(NET PLANTED ACRES — THOUSANDS)



PHASING BY MALAYSIA PLANS
(development units only)



Other agencies could include:

	Acres	
GSA type and individual private alienations ...	10,900	rubber
Nucleus estate type organisations	25,550	oil palm and other crops
SEDC	9,500	beef and rubber
Multiplication unit and other dairy	7,600	dairying
Private estates	36,300	oil palm and rubber
MARDI	1,800	research

Oil palm production remains the dominant activity and FLDA the biggest single agency. The beef industry is expected to expand by the addition of a second enterprise, this time in Tanjong Penggerang. The initial dairy multiplication unit will be fully developed and some 5,000 acres of dairying developed outside the unit. This may take the form of an additional multiplication unit or of private or public sector commercial dairy farms grouped round the original unit acting as a nucleus service centre for advice and marketing.

A further 94 miles of primary and secondary roads and 17 new villages and one central village will be built. Expansion of both existing new villages and towns and services will continue.

AGENCIES FOR DEVELOPMENT

The successful implementation of the Master Plan will make heavy demands on existing Government Departments, e.g., JKR, statutory public authorities and on the private sector. For some projects, new agencies are recommended, some of them involving joint participation by the public and private sectors. The activities and efforts of all will require to be firmly controlled and carefully coordinated if the objectives of the Master Plan are to be attained. The following agencies will be involved:

THE DEVELOPMENT AUTHORITY

It is recommended that a Development Authority be established at once to take overall responsibility for the Master Plan implementation. The functions, structure and staff requirements of the Authority and its relationships with the Federal and State Governments are outlined in Chapter 8. Here it is only necessary to stress the urgency of appointing the Chief Executive at the earliest possible moment, to ensure that action is taken to initiate immediate tasks essential to the achievement of the first phase of the programme (SMP 1971-1975).

EXISTING PUBLIC AGENCIES

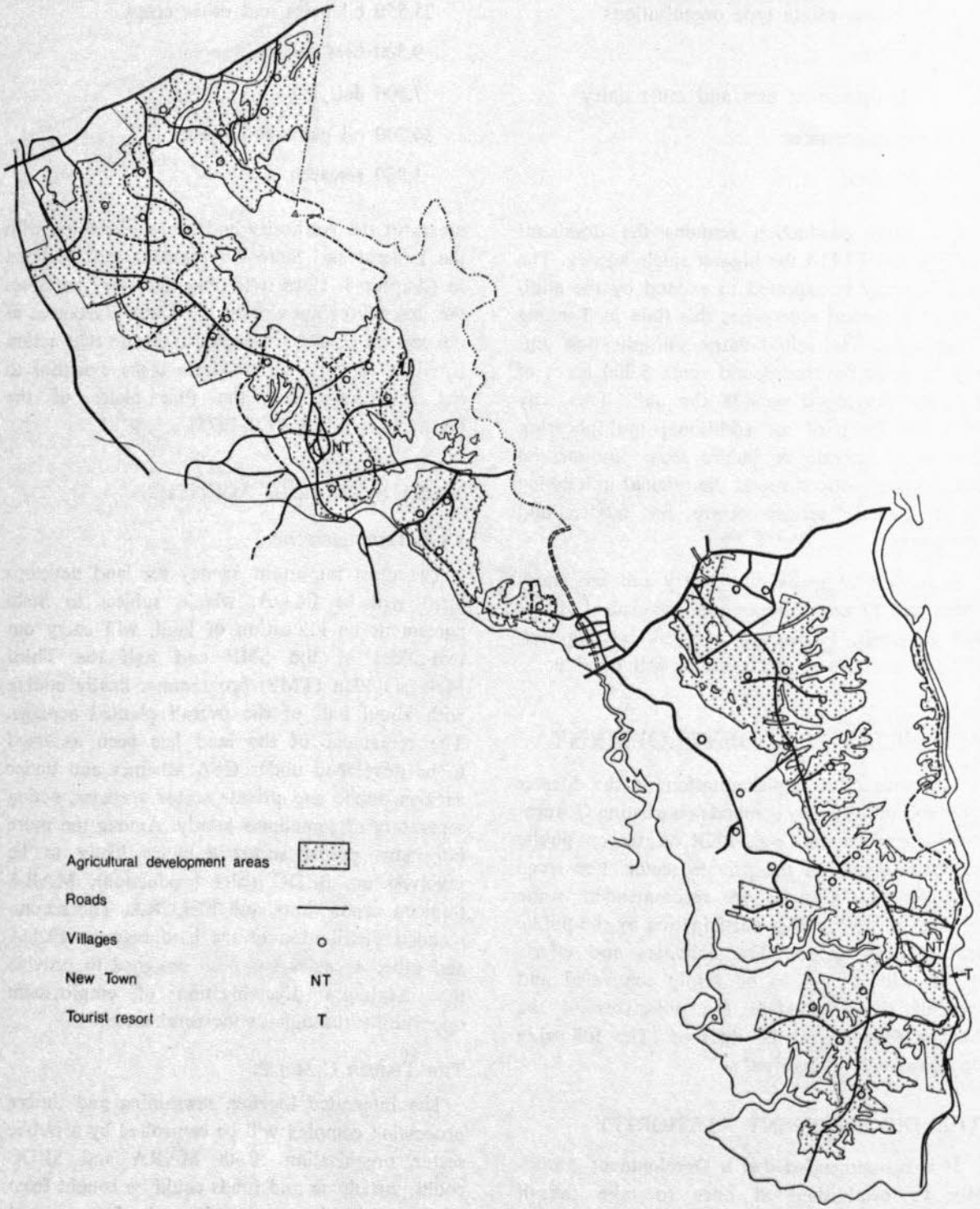
Land Development

The most important agency for land development will be FLDA, which, subject to State agreement on allocation of land, will carry out two-thirds of the SMP and half the Third Malaysia Plan (TMP) programme, finally ending with about half of the overall planted acreage. The remainder of the land has been assumed to be developed under GSA schemes and under various public and private sector agencies, acting separately or sometimes jointly. Among the more important public sector agencies likely to be involved are SEDC (beef production), MARA (tapioca production), and FELCRA. The recommended distribution of the land between FLDA and other agencies has been designed to provide the maximum diversification of employment opportunity throughout the rural areas.

The Timber Complex

The integrated logging, sawmilling and timber processing complex will be controlled by a public sector organisation. Both MARA and SEDC could participate and funds could be sought from an international agency such as the International Bank for Reconstruction and Development

DEVELOPMENT STRUCTURE



(IBRD). Expatriate expertise to establish the operation and train local personnel may be required, in addition to capable and forceful Malaysian management, if the establishment of an organisation of this magnitude is to be completed by mid-1975.

Tourist Development

The initial tourist project is recommended as a joint enterprise between Government and private investors; such an arrangement would best ensure a high level of Malay participation, secure necessary management expertise and provide the training facilities for the Malay participants.

THE PRIVATE SECTOR

The precise role and content of the private sector cannot be indicated with certainty since much will depend on the detailed terms and incentives for participation. Given reasonable terms, however, the private sector would participate in a wide range of activities of which the most important will be:

(i) Opening of new land by individuals and companies in large and small holdings;

(ii) Establishing processing and marketing facilities;

(iii) Joint ventures with public sector agencies;

(iv) Employment as managing agents in the fields of; land development and production, including low cost family settlements and nucleus estates; processing and marketing; technical field management; supplies of inputs and office management and accounting services;

(v) Provision of training facilities both on estates and in research establishments;

(vi) Road transport: strong and varied participation is to be expected and encouraged especially in the road haulage sector.

OUTCOME

The Plan will create, within the leading sectors of agriculture, forestry and tourism alone, more than 10,000 full time jobs by the end of the SMP period, and almost 40,000 by the end of 1990. In addition substantial employment will be generated in service industries in and close to Johor Tenggara to support the development. Total employment within Johor Tenggara arising from the Plan is likely to exceed 63,000 by 1990.

The gross output of the leading sectors will total more than $100 million in 1980 of which about 85 percent will consist of exports. This compares to a "direct import" figure in the same year of less than $30 million. Over half the gross output figure would be received as income by FLDA settlers and others living in Johor Tenggara, and in 1980 almost $8 million would accrue to the State and Federal Government from land rents, cesses and duties.

Income to the State Government over the Master Plan period from timber royalties, land rents and premia would total $65 million, while the Federal Government would receive about $98 million from cesses and duties on rubber and palm oil over the same 20 year period. In addition there would of course be substantial tax revenues from income and corporation taxes and from indirect taxes on production inputs and consumption goods.

The development expenditure on roads, bridges, water supply, schools, telecommunications and health facilities by Federal Government departments would be about $224 million in the Master Plan period (1971-1990) and just under half of this would be spent in the SMP period. FLDA's financial requirement for Johor Tenggara would be $60 million in the SMP period, rising to $109 million in the TMP period but FLDA would have a net income from Johor Tenggara after 1980.

Relative to other investments in the economy, the investment in the Plan is likely to be labour-intensive and the provision of employment will itself help to prevent income disparities from increasing. Since this type of development will also be relatively favourable in its effects on the balance of payments and certainly favourable, with the present tax and duty structure, in its effect on public finance, investments of this type should have a high social and economic priority. The Plan gives an attractive social rate of return of about 17 percent per annum, and further investments in land development would almost certainly enable a faster rate of growth in employment and economic growth to be achieved with less strain on the balance of payments compared with most other types of investment.

The impact of job creation in helping to prevent income disparities increasing has just been referred to, but apart from this the Plan itself seems unlikely to reduce overall income disparities between rural and urban occupations (a problem which has accompanied the trend towards urbanisation almost everywhere) unless either rubber or oil palm prices remain higher than they are at present, or the incidence of taxes and duties on the output of rubber and palm oil is lessened. The Plan does, however, seek to make rural occupations more attractive by providing for facilities at present only available to urban communities. It also — and this is perhaps the most important element—seeks to provide higher income opportunities in the rural sector, in new diversified agriculture, timber processing, and service industries; (and outside it. also in the tourist industry. These opportunities can raise the level of income of at least a proportion of rural workers and also, by seeking to attract rural workers into new and more profitable occupations, can—as the majority of rural population tends to be Malay—help to reduce ethnic economic disparities.

CONTENTS

AMENDMENTS AND ERRATA

RATES OF RETURN

Rates of return on investment, for the different enterprises examined, are usually expressed in both 'financial' and 'social' terms. Where these are not explicitly stated, the rates of return are as follows:

FLDA Project—Chapter 4, page 57

The internal rate of return of 18 percent is the 'social' rate of return. The 'financial' rate of return is 6 percent, as explained in Supporting Volume 6 page 18.

The Beef Production enterprise—Chapter 4, page 63

The rate of return of 17 percent indicated is the 'financial' rate of return.

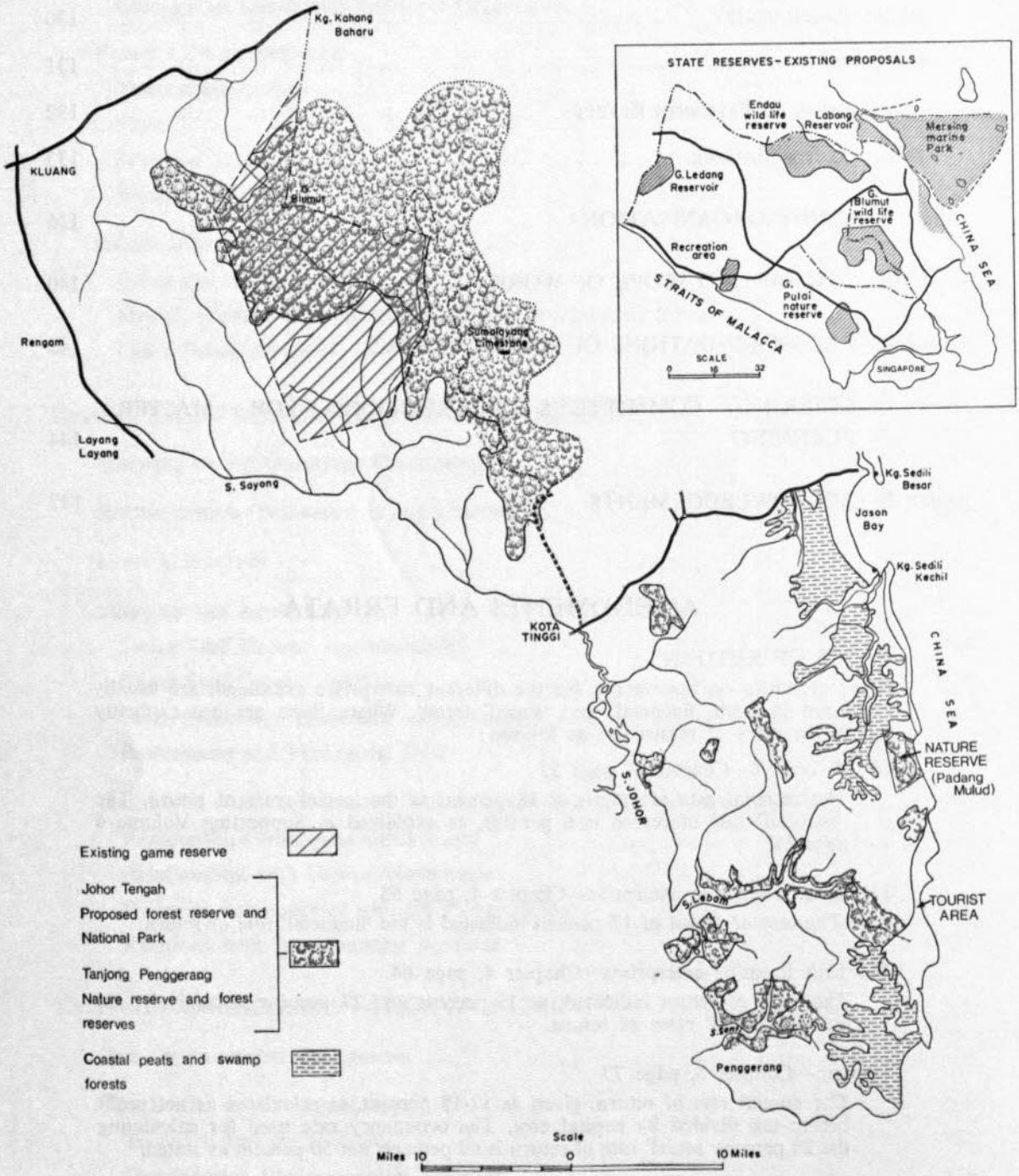
The Fish Farming enterprises—Chapter 4, page 64

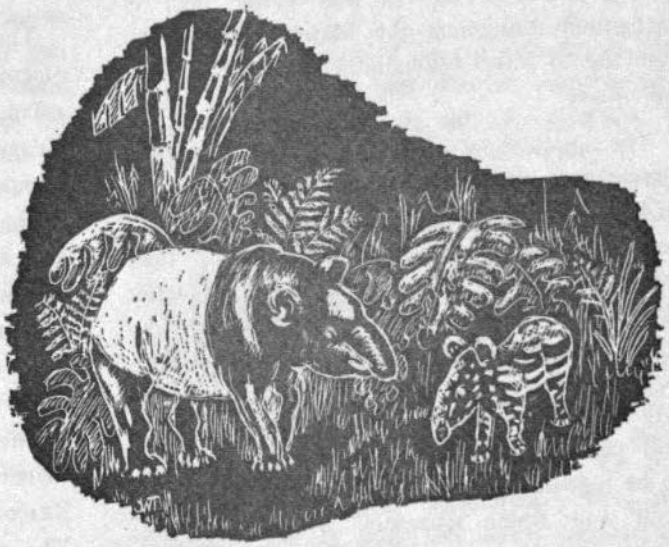
The rates of return indicated, at 15 percent and 27 percent respectively, are both 'financial' rates of return.

Tourism—Chapter 5, page 77

The annual rate of return, given as 17-18 percent, is calculated as net profit before tax divided by capital cost. The occupancy rate used for calculating the 28 percent 'social' rate of return is 60 percent, not 50 percent as stated.

CONSERVATION





chapter one
CONSERVATION

DEVELOPMENT AND CONSERVATION

The maintenance and, wherever possible the improvement, of the qualities of the physical resources is an important regional planning objective.

Balanced regional development, therefore, must include the protection of water catchments and reservoirs, the conservation of biological communities, jungle reserves and wild life, and the preservation of scenic assets in the interests of recreation and tourism.

Provisions are made within the Master Plan to meet these requirements and include actions required to prevent, or to remove the effects of pollution.

Terrain slope as well as rainfall characteristics is an important factor in determining the nature of conservation measures. The steepland boundary

differentiating between land with average slopes greater than 20 degrees and flatter land is recognised throughout the Master Plan as the limit up to which agricultural development may take place.

The application of this steepland boundary limitation excludes a total of some 65,000 acres of land from agricultural use in the Johor Tengah region, including some 6,000 acres of land generally steeper than 25 degrees. The latter should be permanently excluded from all development and the balance should be excluded temporarily. However, it is anticipated that methods will be developed in the next 10-15 years, which will permit timber to be extracted and forest to be regenerated without adversely affecting the land and water resources. Then marketable timber may be extracted, thereby adding 8-9 years to the life of the timber complex.

LAND AND WATER CONSERVATION

Measures necessary for the protection of either of these resources are generally common to both. Their effectiveness can be improved or further measures introduced if changes in the hydrological regime are observed and measured following changes in ground cover.

WATER CATCHMENT STUDIES

A hydrological network was set up and operated during the course of project studies to observe the effect of differing land use upon river behaviour.

The changes noted are of sufficient significance to propose that the network should continue in operation in the years to come. Steps have already been taken by Drainage and Irrigation Department to accept responsibility for the maintenance and operation of the network.

Further proposals are made (SV 5) for a comparison to be made of changes in river and stream flows between permanent forest catchments and adjacent catchments planted to oil palms or rubber.

WATER CONSERVATION

The exclusion from development of land steeper than 20 degrees will provide a valuable safeguard to the general water resources of Johor Tengah. However the Master Plan anticipates an increasing internal demand for water supplies in the Project Area as a whole and for additional increased external demand in Johor Tengah (SV 3), and specific development of some of the potential water resources is needed to provide these requirements.

The construction of three dams is recommended, two in Johor Tengah and one in Tanjong Penggerang, to regulate water supplies. The gross catchment areas serving these dams total 72,200 acres and should be protected. Recommendations are made that no agricultural activity should take place within them, irrespective of terrain conditions, and that only marketable timber should be extracted from them.

WATER POLLUTION

The possibilities for pollution of the river system in Johor Tenggara following the implementation of development plans are substantial. They will include noxious effluents from palm oil, rubber and canning factories, sediment from tin mining industry, domestic sewage and refuse. It is not anticipated that present levels of application of known herbicides and pesticides would constitute a hazard.

Of special importance is the extremely high Biological Oxygen Demand (BOD) in palm oil and rubber factory effluents. Rubber factory effluent also carries high ammoniacal and nitrogen concentrations. It is essential, therefore, that all effluents be treated at source and that regular checks be carried out for the effects of persistent chemicals.

The present suspended sediment loads due to tin mining are considered high.

SOIL CONSERVATION

The measures advocated for the conservation of water resources will help to protect the soil resources. Provision has been made in the Master Plan for other measures which include the recognised systems applied to the protection of land supporting tree crops such as oil palms and rubber, as well as forms of terracing and contour cultivation necessary for the protection of land planted to short term and pasture crops (Working Paper, "*Short Term Rotation Crops*").

With sound agronomic practices, and provided that these measures are continuously maintained and their effectiveness reviewed, it is believed that erosion will not become a problem.

ATMOSPHERIC POLLUTION

As planned development runs its course, pollution of the atmosphere will increase. Factory operations and the use of heavy duty diesel prime movers are the obvious contributors and measures to keep the emission of noxious gases to an acceptable health standard are desirable.

LEGISLATION

By gazetting all land above the 20 degree slope as forest reserves under joint management of the departments responsible for forestry, water and wild life the upper catchments will be protected. However, it is considered that legislation now in force for the control of water pollution should include a schedule of permissible concentration of pollutant materials and that the methods of enforcement be reviewed. In the case of mine effluents consideration should be given to substantially reducing the present legal maximum (SV 3).

It is also considered desirable that revised legislation for the protection of agricultural land on slopes of less than 20 degrees should be promulgated. The need for legislative control of atmospheric pollution should be kept under review.

CONSERVATION OF BIOLOGICAL COMMUNITIES

There is a clear need for conservation of biological communities and positive recommendations are made (SV 5) for the selection of conservation areas and strict nature reserves.

JOHOR TENGAH

It is recommended that within this region and in the adjacent watersheds to the east of it all land above the 20 degree slope boundary and certain lowland catchments be treated not only as a water conservation area, but also as a National Park, totalling 128,000 acres, for conservation of biological communities. This will include a belt of productive forest between the steepland line and the protective forest line, Strict Nature Reserves and connecting enclaves and corridors. Wildlife would be protected within the park in accordance with existing legal provisions.

The park and its surrounds could thus become a model of multiple land use and co-ordinated conservation of natural resources, and an ecological balance could be maintained.

TANJONG PENGGERANG

The areas of particular interest are the freshwater alluvial swamp forest, the peat swamp forest, the marine alluvial swamp forest (mangrove), headlands, a few isolated steepland areas and the proposed water catchment reserve on the S. Lebam. It is within these areas that flora and invertebrate fauna are to be found which have strong affinities with Bornean species.

Apart from the proposed S. Lebam water catchment the formations occur on land not scheduled for agricultural or forest development.

Detailed recommendations (SV 3, 5, and 7) are summarised below:

(1) The headwaters of the major tributaries of the S. Lebam backing the proposed tourist amenity should be regarded as a water

conservation area. Some wild life will remain, provided hunting is forbidden.

(2) The existing forest reserve behind the east coast line should be amended to take into account the tourist and agricultural development proposals.

(3) Strict nature reserves should be created (i) at Padang Mulud within the forest reserve to preserve good examples of strand flora and three rare biological communities, namely beach forest, alluvial swamp forest and coastal hill forest. There is at present some conflict with silica sand mining interests, which should be resolved as soon as possible. (ii) on headlands at Tanjong Gemah, Kelesa and Siang and (iii) on the following hills:

Satu, Tangga Tujoh, Sembilan;

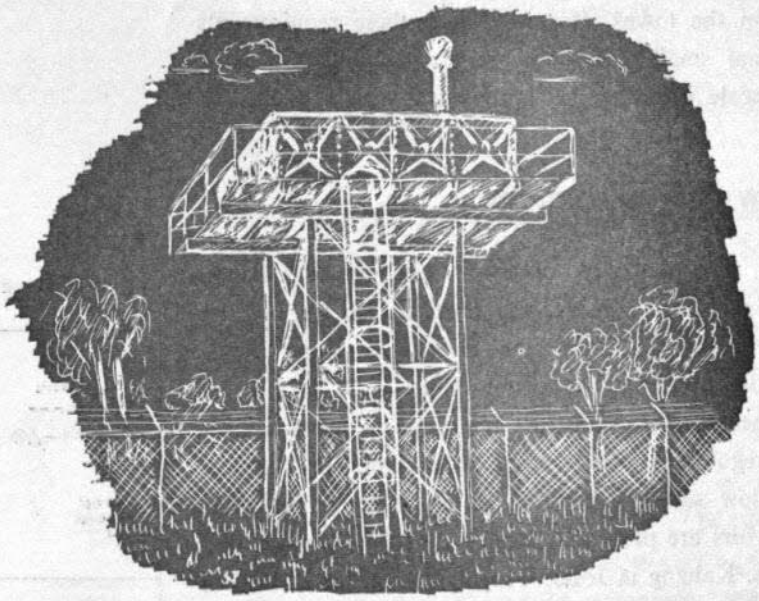
Belungkor, Arang;

Pelai, Kangkar; and

Tambun Tulang,

to preserve the scenery and flora containing Bornean elements. These are all areas of no agricultural potential and contain the headwaters of many streams.

It is also recommended that hunting be prohibited in all reserves and that attempts be made to encourage wild life to move into all protected areas.



chapter two
WATER

WATER DEMANDS

The major demand for water throughout south Johor during the next 30 years will be for domestic and industrial supplies. Estimates of these demands are given in Supporting Volume 3. Within the Project Area the estimated demand in the year 2000 totals 11 million gallons per day (mgd), of which 6.5 mgd will be in Johor Tengah and 4.5 mgd in Tanjong Penggerang. Outside the Project Area the urban areas of Kluang, Pontian, Kota Tinggi and Johor Baharu will require an additional supply of about 85 mgd in the year 2000 to meet estimated demands. The present sources of supply to other JKR demand areas are adequate to meet future demands. An additional supply of 220 mgd, above the current 30 mgd, to Singapore may also be required.

The only definite irrigation requirements are for oil palm nurseries and there could be requirements for growing fruit and vegetables for sale

in the towns. However, both these requirements are small and there are no proposals for large scale irrigation for agricultural development.

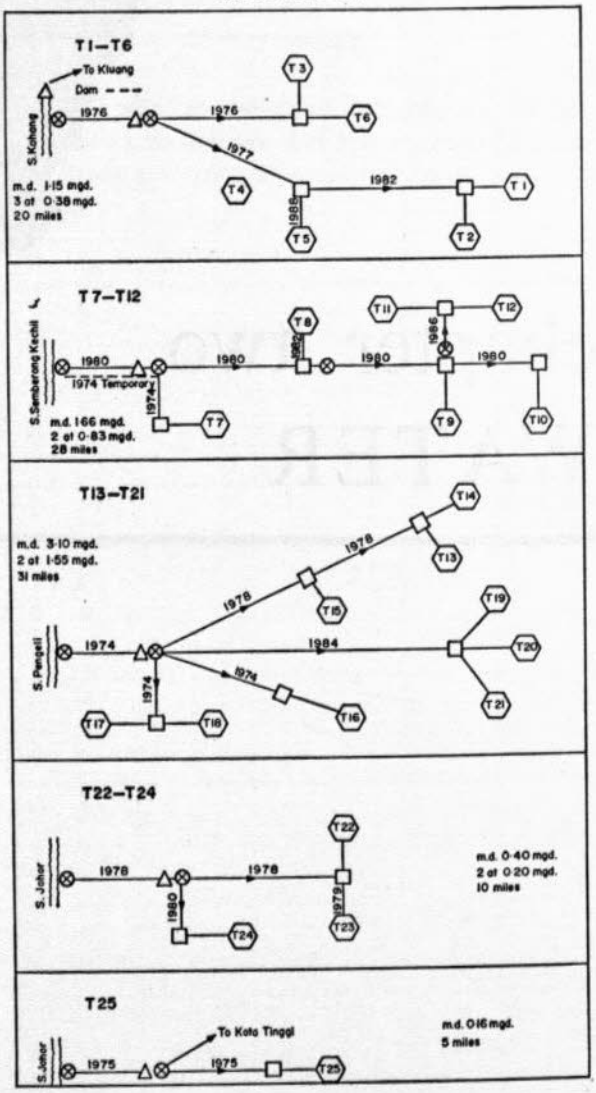
WATER RESOURCES

The demands of towns and larger villages, including industry, are proposed to be met by abstractions from the rivers. In some cases, described in Supporting Volume 3, it will be necessary to construct reservoirs to provide river regulation since run-of river flows in the low flow season cannot meet demands. Three reservoirs are proposed, located on the S. Linggiu and S. Kahang in Johor Tengah and on the S. Lebam in Tanjong Penggerang. There is considerable potential to regulate the rivers and hence to make available for abstraction much larger quantities of water than needed to meet the estimated demands.

Reservoir catchment areas should remain as jungle to reduce soil erosion which would lead to rapid sedimentation of the reservoirs. In addition, the hydrological studies show that low run-of-river flows (with a probable recurrence failure of one year in ten and catchment sizes 20-200 square miles) are in the range 0.15 to 0.40 cusecs per square mile from jungle covered catchments, compared with 0.07 to 0.10 cusecs from catchments that have been planted to rubber or oil palm. If reservoir catchment areas were cleared of jungle the reservoirs would require larger storage capacities to cope with the low flow periods and larger spillway capacities for floods.

Resources of groundwater are limited, but in certain areas may be adequate to meet the demands of the smaller rural communities for whom it is inconvenient, or unduly costly, to provide supplies abstracted from the rivers.

SCHEMATIC VILLAGE WATER SUPPLY
JOHOR TENGAH



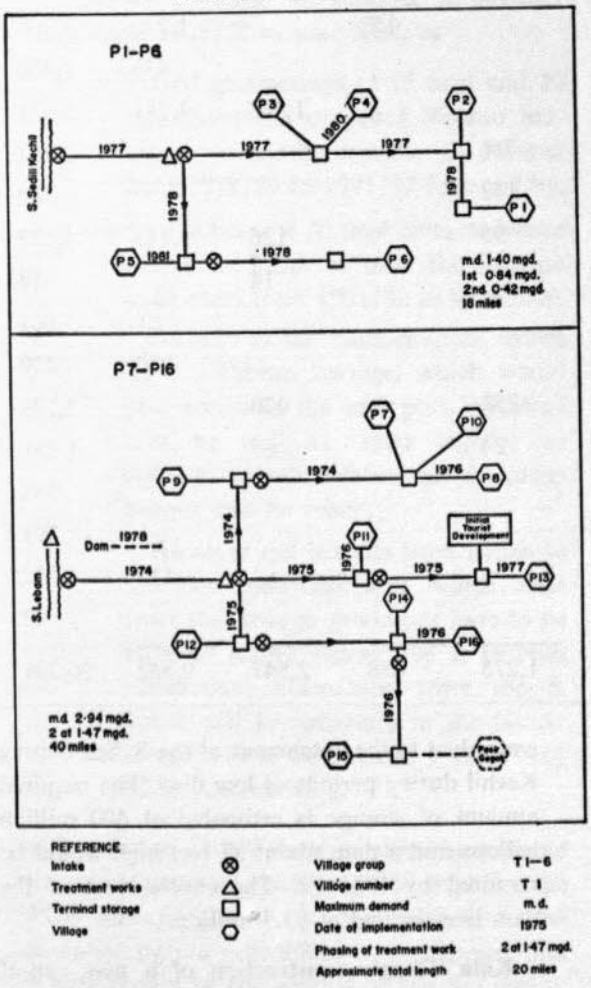
Schemes to Meet Demands Within Project Area

From an economic comparison of alternatives it is recommended that new villages should be grouped into seven separate areas of demand; five in Johor Tengah and two in Tanjong Penggerang. Each group would be supplied from a separate source and treatment works.

The principal features of the proposed seven schemes are shown diagrammatically. In all schemes terminal storage equivalent to one day's supply is provided, phased in accordance with the rate of growth of demand. In no scheme has phased expansion been allowed for the intake, pumping station and pipelines. These are all installed initially to meet maximum eventual demand. Pipe-lines range between four inches and 18 inches internal diameter.

All schemes rely on run-of-river flows, except that flows at the intake on the S. Kahang (Village Group T1-T6) will be released from the Kahang reservoir (needed for Kluang town) after 1981/82 and that flows at the intake on the S. Lebam (Village Group P7-P16) will be released from a small reservoir on the S. Lebam. It is estimated that the Lebam reservoir will be needed by about 1977, and exploitation of any mineral potential in the catchment should be completed by 1976. The height of the Lebam dam is estimated at 25 feet and the capital cost is estimated at $3.2 million. If the full capacity for tourism and associated urban development is realised then an additional demand of 9 mgd could be created. To meet this demand the dam on the Lebam would need to be raised by approximately 10 feet, and construction of additional pipe-lines, treatment works etc. would be required.

SCHEMATIC VILLAGE WATER SUPPLY
TANJONG PENGGERANG



The capital cost of all schemes combined, (SV 3), is estimated at $26.80 million, of which $14.42 million will be spent in Johor Tengah and $12.38 million in Tanjong Penggerang. The phasing of capital to be invested is as follows (all costs in thousand dollars):

Year of Commissioning	Johor Tengah					Tg. Penggerang		Total
	T1-T6	T7-T12	T13-T21	T23-T24	T25	P1-P6	P7-P16	
1974		250	2,358				2,451	5,059
1975					438		1,770	2,208
1976	1,021						435	1,456
1977	482					1,588	3,381	5,451
1978			913	756		628		2,297
1979				142				142
1980		2,717	88	95		126	1,147	4,173
1981						14		14
1982	719	82						801
1983							230	230
1984			2,054	258		426		2,738
1986	154	1,037		24		65		1,280
1988	392							392
1990		254	137					391
1992							118	118
2000		43						43
Total ..	2,768	4,383	5,550	1,275	438	2,847	9,532	26,791

Annual operation cost will increase as demand increases and is estimated to reach $0.9 million at maximum demand for all schemes combined. Operation cost per 1,000 gallons for individual schemes at maximum demand is estimated to be in the range 18-35 cents. During the initial years, annual operation costs per 1,000 gallons will be considerably higher.

SCHEMES TO MEET DEMANDS OUTSIDE THE PROJECT AREA:

Kluang: phased expansion of the existing JKR intake (located on the S. Semberong Kechil), treatment works and terminal storage to a capacity of 16 mgd is proposed. Construction of an earthfill dam on the S. Kahang is recommended, with the controlled transfer of water from the reservoir by pumping over the watershed to the catchment of the S. Semberong Kechil during periods of low flow. The required amount of storage is estimated at 400 million gallons and a dam about 27 feet high would be required by 1981/82. The capital cost of the dam is estimated at $3.5 million.

Kota Tinggi: construction of a new run-of river intake on the north bank of S. Johor, approximately half mile upstream of the confluence of the S. Panti and S. Johor, and phased expansion of new treatment works and terminal storage to a capacity of 2.6 mgd is proposed. The existing treatment works on the S. Pelepah would be retained.

Johor Baharu. (Including Industrial Area/ Port) Pontian: these three areas have been combined into one area of demand. It is

estimated that the projected demand up to 1978/79 can be met by increased abstractions from the Public Utilities Board (PUB) mains under the terms of the 1961 Agreement between Johor State and Singapore. After 1978/79 demands will have to be met either from—

1. Phased abstractions of 15 mgd, 20 mgd and 30 mgd from an intake on the S. Johor to meet the increase in demand from 1978/79 to year 2000; or

2. (*a*) Phased abstractions of 15 mgd and 20 mgd from the proposed Tebrau barrage to meet the increase in demand from 1978/79 to 1991/92 followed by,

   (*b*) Abstractions of 30 mgd from an intake on the S. Johor to meet the increase in demand from 1991/92 to year 2000.

   Because of the multi-purpose nature of the Tebrau barrage, which would give access to the new port/industrial area as well as water supply, no definite recommendation on the alternatives can be made.

   However the benefits from access to the port/industrial area which arise from the barrage would not have to be large to justify Alternative 2. In both alternatives abstraction from the S. Johor will be necessary in the future; in 1978/79 in Alternative 1 and 1991/92 in Alternative 2.

Regulation of S. Johor: to meet the possible maximum demand, including 250 mgd for the PUB Singapore, that could be placed on the S. Johor by the year 2000, it is proposed that a dam should be constructed on the S. Linggiu. For maximum demand the required storage capacity is approximately 23,000 million gallons and a dam height of about 55 feet would be required. The estimated cost of the dam is $7.8 million. The exact date that storage will be needed cannot be decided at present, since it will depend on factors such as future abstraction capacity at the PUB intake, restricted pumping time that the PUB may be prepared to accept, and the date when the Johor Baharu area will be supplied from the S. Johor. Based on the latter a reasonable estimate of the earliest date would be 1978/79. In this case exploitation of any mineral potential in the catchment should be completed by 1977.

For demands less than the possible maximum, the above site on the S. Linggiu would be cheaper provided the storage requirement exceeds 6,000 million gallons. For storage requirements of less than 6,000 million gallons then a dam located on the S. Pengeli would be preferred. For a storage of 6,000 million gallons the capital costs of the Linggiu and Pengeli dams are both $5.3 million.

OTHER DEVELOPMENT WITHIN PROJECT AREA

There are no proposals for major land drainage, hydro-power or flood mitigation schemes. Engineering measures for mitigating flooding of Kota Tinggi town were examined and all were found to be uneconomic (SV 3).

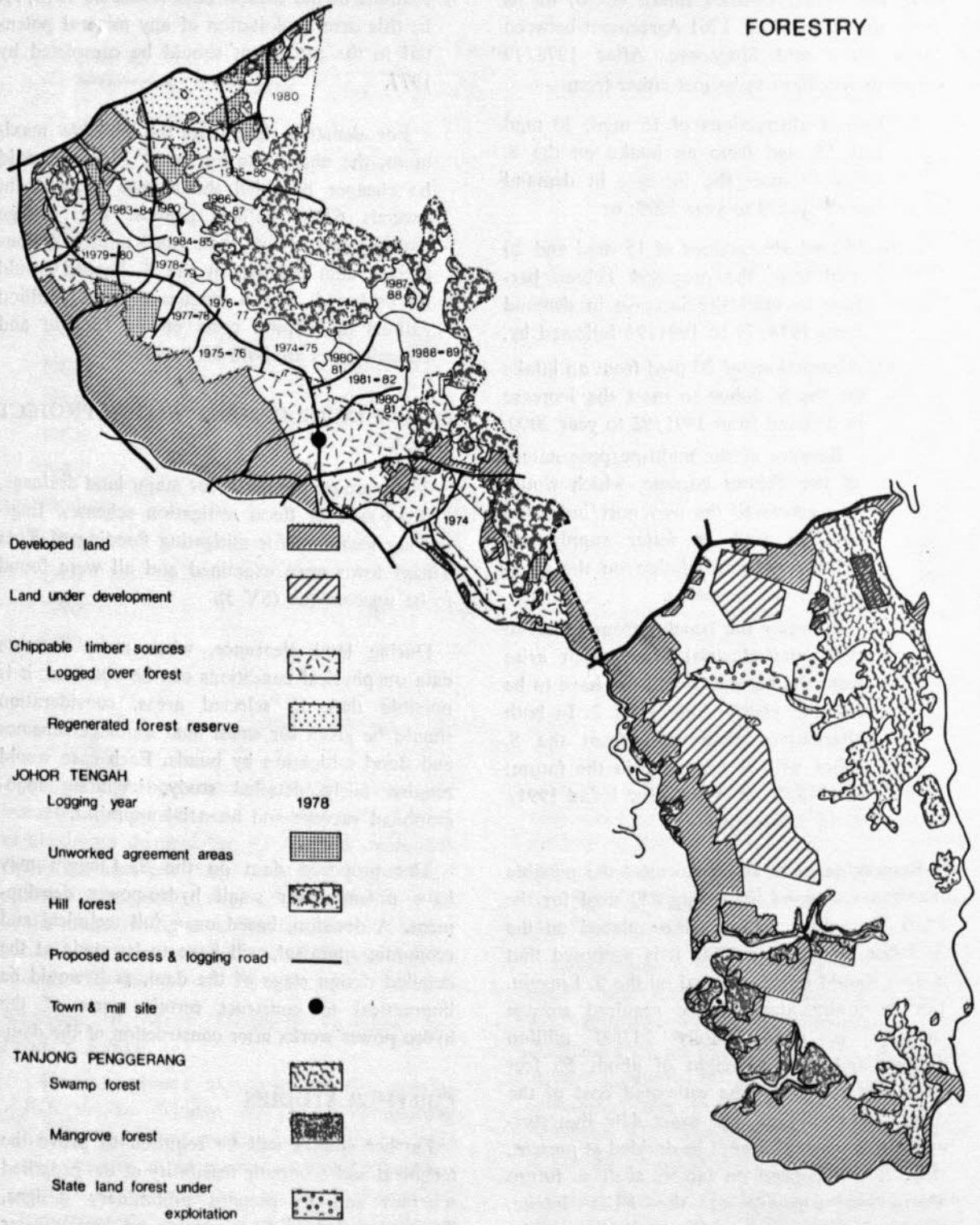
During land clearance, when more accurate data on physical conditions can be obtained, it is possible that, in selected areas, consideration should be given for small land drainage schemes and flood mitigation by bunds. Each case would require fairly detailed study, including topographical surveys and financial appraisal.

The proposed dam on the S. Linggiu may have potential for small hydro-power development. A decision, based on a full technical and economic appraisal, will have to be made at the detailed design stage of the dam, as it would be impractical to construct certain parts of the hydro-power works after construction of the dam.

FURTHER STUDIES

Further studies will be required to prove the technical and economic feasibility of the proposed schemes and to prepare preliminary designs. These, together with comments on groundwater studies, are outlined in Supporting Volume 3.

FORESTRY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Land under development
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Logging year
1978
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Proposed access & logging road
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TANJONG PENGGERANG
Swamp forest
Mangrove forest
State land forest under exploitation

chapter three
FORESTRY

POTENTIAL OF THE JOHOR TENGGARA FORESTS

The forests of Johor Tenggara have an important role to play in the development pattern. While parts must be retained in perpetuity for conservation purposes (Chapter 1), the productive qualities of the forests are such that they should make a substantial contribution to the forestry industry and to the State revenues. If this is to be realised, timber utilisation must be co-ordinated with the land clearance programmes which are a fore-runner of agricultural development.

Both disturbed and undisturbed forests are to be found in the Area. The former predominate particularly in Tanjong Penggerang where, due to previous logging activity virtually no timber remains which can at present be classified as marketable. Large areas of undisturbed timber occur in Johor Tengah, and it was here that the main forest enumeration study was carried out

over one compact block of 149,000 acres of hill and lowland forests in the centre and north.

The enumeration revealed that the lowland dipterocarp areas (the forests below the 500 foot contour), totalling 119,000 acres, could be expected to yield an average of about 20 FD tons per acre of large, potentially marketable timber and 30 FD tons per acre of "residual" timber (small stemmed or large timber of currently unacceptable species). The hill dipterocarp forests, totalling in the Johor Tengah area about 65,000 acres, are estimated to contain about 23 FD tons per acre of marketable timber which may be extracted in time when suitable logging and regeneration techniques have been devised. Although these hill forests also contain about 21 FD tons per acre of residual timber, there are compelling reasons of conservation which prohibit their extraction.

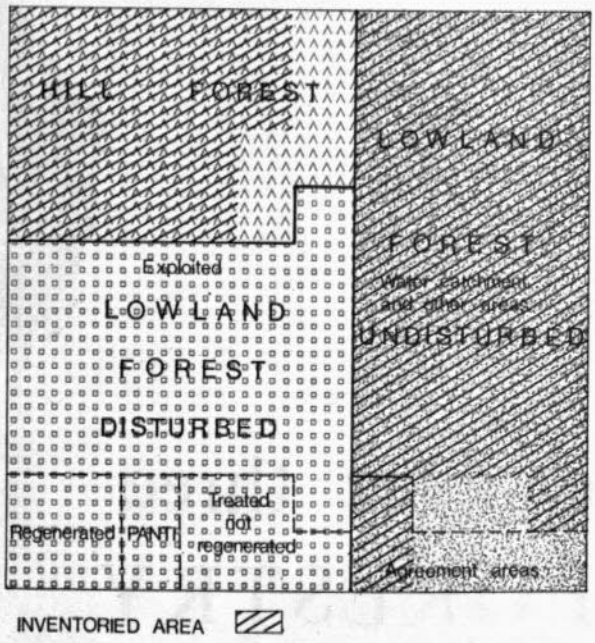
A limited enumeration of the disturbed forests of Tanjong Penggerang shows that they could also yield more than 30 FD tons of residual timber.

The enumeration area in Johor Tengah includes 92,000 acres of lowland forest which it is estimated would yield some 1.8 million FD tons of large marketable timber. Residual timber from the same area is estimated to be 2.5 million FD tons to which may be added 2.3 million FD tons from Tanjong Penggerang. In addition to the 92,000 acres, there are another 14,000 acres which are already the subject of logging agreements between private interests and the State of Johor and another 13,000 acres which it is recommended should be made the subject of new agreements. The latter 13,000 acres could be expected to yield 0.22 million FD tons of large marketable timber and an additional 0.45 million tons of residual timber.

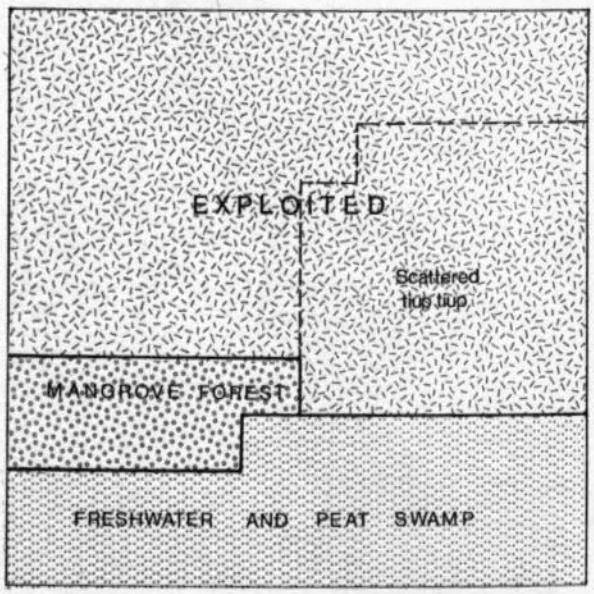
The total quantities of timber are large, but if the full benefits to the State, the timber industry and West Malaysia are to be obtained from this timber two important developments are necessary:

(*a*) New markets for the residual timber must be identified and developed. Expanding the capacity of further timber processing

JOHOR TENGAH Areas as at 100%



TANJONG PENGGERANG



to produce higher value added timber products is almost certainly a precondition of developing these markets.

(*b*) The system and basis of payment of royalties and premia must be designed to provide an adequate financial incentive for the extraction and processing of residual timber.

If the detailed proposals in respect of both these developments are accepted it is estimated that sales of all timber resources in the region could realise $490 million of which about $300 million could come from the sales of residual timber.

However, recognising the immediate need to start agricultural development, a great part of these potential benefits from the timber in Tanjong Penggerang will be lost unless immediate action is taken to identify and develop markets for residual timber.

In Johor Tengah, where agricultural development is to follow that in Tanjong Penggerang, there is a such greater opportunity to abtain the maximum benefits. The Master Plan includes a project to exploit those timbers for which there appears to be a market and to act as a leader in developing the market for higher value added products. As the market for the residual timber develops the project should be expanded to include its extraction and processing. This expansion need in no way interfere with the proposed initial project.

It is evident that present logging and milling capacity of varying competence within the Region could log and rough mill the anticipated yield from the 119,000 acres of lowland forest. However, except for plymilling, established capacity is not geared to the processing of logs into high price commodities. Neither do the new mill facilities as proposed in the State cater for them.

THE DESIGN OF THE TIMBER UTILISATION PROGRAMME

The timber utilisation programme proposed has been designed to:

(i) market as wide a range of species as possible, finding new outlets where necessary to obtain maximum profitable utilisation of the timber resources;

(ii) provide for the production of a large proportion of high price products (seeking new markets where necessary) to achieve maximum value added from forestry operations in West Malaysia;

(iii) offer increased opportunities for training and participation of Malays in the industry.

In order to achieve these three important objectives, it has been decided that additional logging, milling and processing facilities should be established in Johor Tengah and, in accordance with the recommendations of the Review Group, that one organisation should be established to control both the logging and processing operations. It is also recommended that, to facilitate agreement with the objectives of the New Economic Policy, the operations should be controlled by a public sector organisation. It is recommended that this integrated logging and processing complex should cater for the 92,000 acres of lowland forest outside the existing and new agreement areas.

The total programme in Johor Tengah takes account of existing logging agreements and the two recommended "new" agreement areas. Logging in these latter two areas needs to be completed by 1974 and 1980 respectively and the terminal date should be an important part of the agreement.

THE LOGGING PROGRAMME OF THE TIMBER PROJECT

The processing facilities of the complex will be supplied from an annual coupe from 6,000 acres, over a minimum period of 15 years. The phasing of the log extraction will be compatible with the

land clearance programme; and the logging of blocks of agricultural land will be completed by the middle of each year with land clearance scheduled to follow on from the following October. Log extraction commences in 1974 in the north-west and south-east of Johor Tengah and follows in a regular pattern until by 1986 extraction of timber from 71,000 acres of land for agricultural development will have been completed. In the following 3 years logs will be taken from a further 21,000 acres of the total land reserved for protected water catchments. Fifteen years is not necessarily the maximum length of the logging programme. It is desirable, in fact, that it should be extended; this can be assured by logging for a further 8-9 years in the steeper land of the inventory area when management techniques are devised. Alternatively additional uncommitted forest, which could provide further log supplies, lies adjacent or near to the enumerated area although the authorities cannot give a guarantee of its allocation to the timber complex at this time.

Of the two logging methods at present in use in West Malaysia it is assumed that the more recently introduced skidder method will be used, because of its apparent advantages over the more traditional winch lorry system.

In the implementation schedule for the timber complex, provision has been made for designing and constructing the major roads to a higher than normal standard so that they can form part of the permanent communications network for the development programme. Arrangements should be made for reimbursement to the logging company of the excess costs.

The annual logging coupe will yield an estimated 120,000 FD tons of logs of which 35,000 tons would be sold to existing plymills in Johor and the remaining 85,000 tons would be processed in the processing facilities established by the complex.

THE COMPLEX PROCESSING FACILITIES

The complex will be located at the site of the proposed new town in Johor Tengah, a central site which is within 20 miles of any part of the logging area.

Modern equipment and facilities will be installed to handle the 85,000 FD tons throughput. A mix of products to be obtained from the presently marketable species is recommended as follows:

28,000 tons rough sawn and air-dried timber.

7,000 tons rough sawn pressure treated timber.

5,000 tons rough sawn kiln dried timber.

7,000 tons mouldings.

If uses and clearance for the presently non-marketed species are confirmed, new processes would be required which would change the pattern of the mix.

The organisation operating the project must be set up before the end of 1971 and the establishment of the timber processing facilities must start by mid 1972, if the sawmill is to be in operation by mid-1975.

When maximum throughput is achieved in 1976, the annual sales of products will total $12.6 million. Total capital required to establish and operate the complex will be $16 million of which the logging facilities would account for $9.5 million and the processing facilities would account for $6.5 million. The financial rate of return for the investment is 28 percent before the deduction of any royalties and premia or 18 percent after the deduction of $25 million of combined royalties-and-premia which it is recommended should be paid in the form of a lump sum per acre logged. The social rate of return from the complex is estimated to be more than 40 percent per annum.

THE ORGANISATION FOR THE PROJECT

It cannot be emphasised too strongly that the start of the forestry operations and the maintenance of their impetus are the key to successful forest exploitation in Johor Tenggara during the Second Malaysia Plan.

This urgency and the magnitude of the operations compared with present annual coupes in Johor State indicates the need for capable and forceful management. The recommendations (in the Plan Outline) are based upon this need. In addition to competent management, a large team of skilled technical operators will be required to carry through the programme.

In all some 680 personnel will be required. Of these, sixty-five posts demanding high qualifications and/or experience must be filled in 1972. They comprise mainly management and senior production personnel.

The early appointment of such men is required if the necessary training programmes are to be drawn up and implemented effectively. The programmes provide not only for the in service training of Malaysians in Malaysia but also overseas. Appointment of the Managing Director, Logging Manager, Processing Manager and Financial Controller should be made early in 1972.

There are several forms of organisation in which these personnel and their skills can be combined. Provision has been made for control by public sector organisation. Both the SEDC and MARA could participate and additional funds could be sought from an international agency such as the World Bank. Provision of skilled and experienced specialists, both to establish the operation and to train local personnel, may have to be sought outside Malaysia in the first instance. It is understood that a system of direct recruitment is presently favoured. The criteria for introducing this necessary expertise should influence the choice. Among the most important are capacity to ensure rapid implementation, high profitability, major carefully prepared and supervised training programmes and the rapid recruitment and assimilation of skilled Malaysians into the organisation.

RESIDUAL TIMBER

Immediate studies were recommended in the Draft Project Report to provide technical and marketing information on the utilisation of residual timber, especially for chipping. At that time it was not considered by the Review Group that the studies were warranted.

However, in the intervening period the consultants' views and optimism about the marketing potential of residual timber have been strengthened. The utilisation of residual timber has been studied in more detail and the opportunity is again taken to make recommendations for action by the Forest Department and for chipping studies.

The opportunity to derive further benefits from the timber resource still exists although the immediate implementation of the Master Plan could lead to some loss. If the yield assumptions for residual timber are realised and prices similar to those ruling for rubber wood apply, the annual sales of residual timber from the Region would be at least $20 million. The benefits from developing the market however, would apply more widely than in the Johor Tenggara region.

A number of possible markets for wood chips are listed in Supporting Volume 5 and it is thought that consideration should be given to the establishment of a chipping mill additional to that now being established in Johor.

ROYALTIES AND PREMIA

Revenues to the State Government accruing from the 92,000 acres of the timber complex would be about $20 million from the extraction levels conditioned by the present system of premia and royalties.

In the Draft Project Report however recommendations for changes in the present system were submitted. They were formulated in the

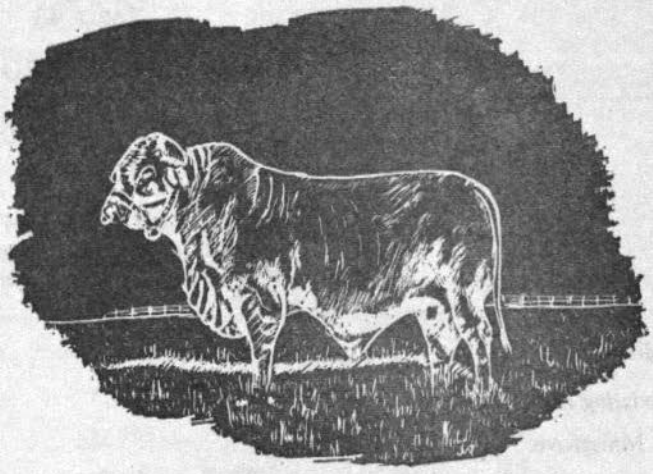
belief that they had two important functions. First, to produce revenue for the State Government; second to be a positive instrument by which the fullest use of the timber resource could be made. The former is self evident. The latter contains implications for the removal of larger volumes of small popular timber and, no less important, the extraction of a wider range of species.

In brief, the proposals advocated the award of concessions to the highest bidder and the publication of the results of the bids. The Forest Department would place a reserve price on each concession, based on an inventory. The system, combining the present royalty and premium elements, would increase the incentive to fuller exploitation and would be simpler to administer.

In those areas which contain large marketable logs, and which are to be later cleared for agricultural development, there should be no restriction on the types of timber to be extracted, once the fee for the areas has been paid. In those areas which are covered by existing logging agreements, or contain no large marketable logs, lump sum tenders should be invited with again no restrictions on the extraction of timber for those tract of land which are to be cleared for development.

The Review Group, which considered the above proposals, recognised the desirability for change, in a manner applicable to all the States. The Consultants' recommendations are therefore restated and amplified. Further, it is thought that the objection to a lump-sum tender system being introduced in Johor State alone can easily be overcome if the safeguards suggested in the Supporting Volume 5 are adopted.

The effect of such changes in the system would increase State revenue from the 92,000 acre complex area by at least 25 percent, or by more than $5 million, over its 15 year life.



chapter four
AGRICULTURE

INTRODUCTION

The availability and suitability for agricultural development of the land in the Project Area is shown in Table 4.1. Of a gross area of 742,200 acres, 305,100 acres are either developed already, or are existing or proposed reserves. Of the 437,100 acres remaining, 281,500 acres are recommended for agricultural development in the next two decades. A further 45,000 acres may have a potential later, but 110,000 acres are excluded on account of soil and topographical constraints, which are discussed in Supporting Volumes 2 and 6. The agricultural plan described in this chapter is concerned only with the development of the 281,500 acres.

SUMMARY OF PLAN

Table 4.2 shows the annual and cumulative rate of land development from 1971 to 1987. Of the 281,500 gross acres 249,800 will be planted.

TABLE 4.1

LAND USE IN THE PROJECT AREA

	THOUSAND GROSS ACRES				
	1	*2*	*3*	*4*	*5*
	Land proposed for agricultural development	*Land reserved for non-agric. development*	*Land which may have agric. potential in future*	*Land not available or suitable for dev't.*	*Total*
Alienated	5.7			212.5	218.2
Existing reserves:					
Mangrove				18.0	
Mining and towns				21.9	
Malay and aboriginal				5.6	45.5
Land excluded from agricultural development:					
Slopes > 20°		32.6(1)		41.5	74.1
Peat swamp				36.0	36.0
Alluvial valley subject to flood and beach sands			37.0		37.0
Proposed development reserves:					
Towns/tourism		7.5			7.5
Water catchments		39.6(2)			39.6
Currently inaccessible			8.5		8.5
Agricultural development ..	275.8				275.8
TOTAL ..	281.5	79.7	45.5	335.5	742.2

(1) Total water catchments of 72,200 acres which include 39,600 acres land with agricultural potential which has been excluded from development for conservation purposes and 32,600 acres of non agricultural land > 20 degrees slope.

Approximately 49 percent of the area is assumed to be developed by FLDA or FLDA type agency and 51 percent by various other agencies. The final cropping pattern for evaluation purposes is:

	Acres	Percent
Oil palms	144,600	58
Rubber	58,700	23
Beef	11,400	5
Dairy	9,800	4
Tapioca	12,600	5
Others	8,700	3
Research	4,000	2
	249,800	100

Descriptions of the individual development units and their cropping patterns are given in Supporting Volume 6, Part 1.

RUBBER AND OIL PALMS

It is the known aim of the Government's agricultural policy to seek to establish new activities and to reduce the present dependence of the economy on rubber and oil palm production. In spite of this the proposed cropping pattern includes just over 80 percent of these two crops. The

TABLE 4.2

ANNUAL AND CUMULATIVE RATE OF LAND DEVELOPMENT

Year	*Annual net acres*	*Cumulative net acres*	*Percent*	*Per 5 year period net acres*	*Percent*
1971/2	6,900	6,900	3		
1972/3	24,200	31,100	12		
1973/4	22,500	53,600	21		
1974/5	24,750	78,350	31		
1975/6	24,400	102,750	41	102,750	41
1976/81		210,650	84	107,900	43
1981/6		236,100	95	25,450	11
1986/88		249,800	100	13,700	5

reasons for this are twofold:

(*a*) the desire to attain a rapid rate of land development in order to create as many new jobs as possible in the shortest time. The immediate opportunities for establishing new activities on a scale that would meet this employment objective are limited.

(*b*) the Client's requirement that the consultants prepare a plan for the development of approximately 75,000 acres by FLDA in the SMP period and indicate if possible areas of up to 15,000 acres per year which might be developed in the TMP. Because of the risks and management problems involved FLDA is not able, at this time, to consider any major diversification activities.

However, as through time the potential of additional activities is proven, the diversification element could become substantially larger, since the land now scheduled for planting in the later years of the programme with oil palms and rubber could be developed instead into other activities. It is therefore important not to consider the present cropping pattern as final and fixed, but to maintain a flexible attitude in order to take advantage of future opportunities.

Under the input and output assumptions made by the consultants (Working papers; *Oil Palm and Rubber*) the likely ranges of profitability of the two crops in the Project Area overlap to some extent, suggesting that the balance between the two crops might be fairly evenly split. The heavy preponderance of oil palms (58 percent) over rubber (23 percent) in the cropping pattern results from FLDA's intention to concentrate its oil palm production in Johor and rubber in more northern states. In areas outside the FLDA programme rather more rubber than oil palm has in fact been suggested.

PROSPECTS FOR AGRICULTURAL DIVERSIFICATION

POTENTIAL ACTIVITIES

In accordance with the terms of reference much attention was directed to possible alternative activities for development in the Project Area. More than thirty were examined in relation to the physical environment, market prospects, and availability of technical knowledge (SV 6). Those that appeared suitable for development beyond a purely research and experimental scale were evaluated either as estate scale activities (varying from 1,000-10,000 acres) or as smallholder activities (from 1-20 acres).

The most promising new activities are considered to be the development of an improved cattle industry, producing both milk and beef from grass; tapioca production for conversion to flour and chips; fruit and vegetable production to supply the urban and tourist demand for these commodities in a fresh form and for preservation by canning; fish production from specially constructed fresh-water ponds; production of poultry products, goat meat and pork.

The ultimate scale of any of these activities will be determined by market constraints and by the available technical knowledge rather than by their suitability to the physical environment. Over 90 percent of the available land is considered to be suitable for grass and also for fruit trees of one kind or another; over 80 percent is suitable for pineapples (but mechanisation problems will need solving) and more than one-third for tapioca. Small stock keeping and fish culture can be developed into major industries using very little land.

Enough is known about the above activities to warrant their early introduction into the Project Area on a limited commercial scale, but much more knowledge is required before any of them should or could be developed rapidly into major industries.

Another activity that could become important is the production of copra, but this will depend for economic viability on the use of high yielding hybrid coconut palms, and it remains to be proved whether the inland soils of the Project Area are suitable. If they are, a multiplication programme will be required, and this will inevitably constrain the rate at which the crop will be developed. It is recommended that MARDI should implement the necessary experimental programme and establish small units of breeding material for subsequent multiplication should this be desirable. The recommendations are detailed in Supporting Volume 6.

Two other activities could become important, but both require a period of testing and experiment before being developed commercially. The first of these is cocoa. Efforts to develop this crop in West Malaysia have had mixed success; problems have been numerous. Within the Project Area the acreage of soils of known suitability is small and almost wholly within Tanjong Penggerang, where the rainfall is highest and may constitute a hazard to profitable production; this needs to be tested.

If the Rengam and Harimau soil series, which occur extensively in Johor Tengah, can be shown to support profitable cocoa growing this activity could become important, as the climate conditions over much of this Region are well suited to cocoa.

The last activity worthy of mention is the production of short-term crops such as sorghum, pulses, soyabeans and sweet potatoes in rotations. These crops would have to be confined to the flatter areas of the Project Area, and the maximum permissible slope for their cultivation should be 6 degrees. About 30 percent of the Project Area lands could be suitable. Even in the suitable areas special field lay-outs, involving the construction of graded broad-based terraces at close intervals, will be required to prevent soil erosion. The requirements are described in detail in the Working Paper on *"Short Term Rotation Crops"*. Production of these crops, especially of cereals, will be hazardous in the unpredictable climate of the Project Area; harvesting will be particularly difficult. Analysis of the profitability of this activity shows that there are substantial economies of scale, and advantages are therefore to be obtained by mechanisation. This in turn introduces further technical problems. It is recommended that MARDI give priority in their programme to investigating the problems associated with mechanised production of short-term crops in the Project Area. It is considered that at least five years of experimental work should precede any major effort to introduce these crops on a large commercial scale.

Various other crops have been noted in Supporting Volume 6 as being worthy of attention by MARDI, among them some fruits and nuts, ramie, cinnamon, gambier and some

essential oils. Few of these can be regarded as potential commercial scale activities for some years.

Two possible activities frequently mentioned are cashew nuts and castor oil. Both have been examined by the consultants for introduction into Johor Tenggara and both have been rejected. The reasons for their rejection are outlined in Supporting Volume 6. Several other activities have likewise been considered and rejected; these too are discussed in the supporting volume.

From these studies of the diversification prospects it is concluded that the following activities are the most suitable for immediate introduction:

(1) tapioca production

(2) small livestock production

(3) fish in fresh water ponds

(4) fruit and vegetables

(5) cattle for milk and beef

Of the above only cattle farming is likely to require substantial areas of land on full development. Because the establishment of a successful cattle industry will involve a long breeding and multiplication programme, the build-up period must inevitably be prolonged and in the next decade the land requirement for this activity also will be small. It is therefore clear that any agricultural development programme must in the next 6-10 years be based primarily on the production of oil palms and rubber. For purposes of evaluation it has been assumed that diversification activities by 1987 will occupy 46,500 acres (19 percent) of the net crop area of 249,800 acres. The acreage and proportion of the cropping pattern occupied by the new activities at the end of each Malaysia Plan period and on full development are

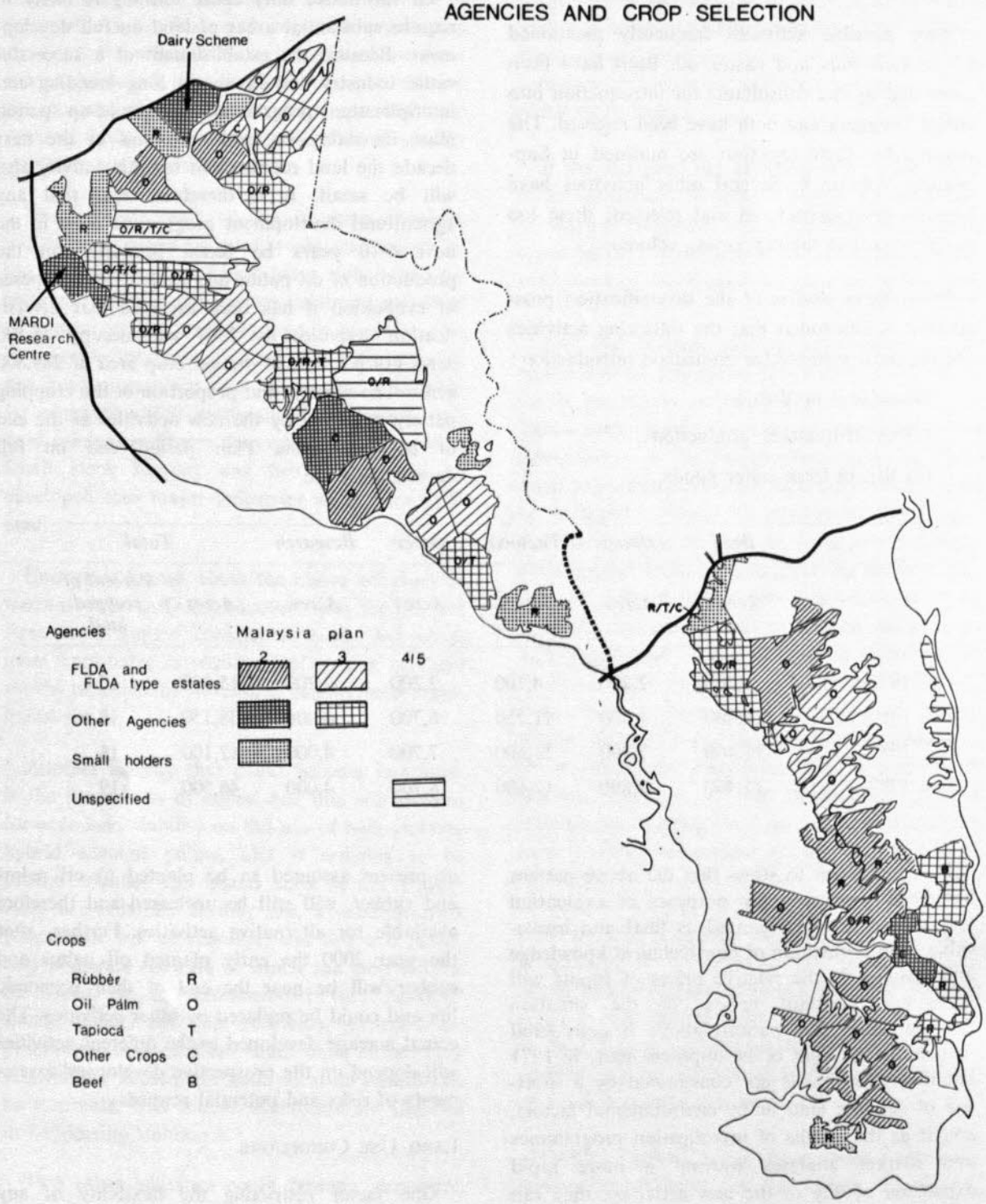
	Beef	*Dairy*	*Tapioca*	*Other*	*Research*	*Total*	
	Acres	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*	*Percent of cropped land*
1975 ..	4,800	2,200	4,100	2,200	2,200	15,300	15
1980 ..	11,400	4,800	11,250	6,700	4,000	38,150	18
1985 ..	11,400	7,400	11,600	7,700	4,000	42,100	18
1987 ..	11,400	9,800	12,600	8,700	4,000	46,500	19

It is important to stress that the above pattern has been used only for purposes of evaluation and should not be regarded as final and irrevocable. The acquisition of new technical knowledge and changes in the relative prices of inputs will necessitate constant review of the situation through time. The pattern above is considered realistic in the light of assumptions made in 1971 but diversification is not constrained by a shortage of suitable land or by environmental factors, and if as the results of investigation programmes and market analyses warrant a more rapid expansion of any of the new activities, they can be substituted for oil palms and/or rubber without difficulty. After 1980 more than 30,000 acres, at present assumed to be planted to oil palms and rubber, will still be uncleared and therefore available for alternative activities. Further, after the year 2000 the early planted oil palms and rubber will be near the end of their economic life and could be replaced by other activities. The actual acreage developed to the different activities will depend on the prospective developers' assessments of risks and potential rewards.

Land Use Conditions

One factor restricting the flexibility of any agricultural enterprise and which may also inhibit diversification is the current system of express

AGENCIES AND CROP SELECTION



conditions incorporated in land alienation orders. These conditions allow only a narrow range of crops to be grown on a specified plot. Thus if a pineapple grower wishes to plant tapioca, he must apply for a change in express conditions. If he subsequently wishes to grow vegetables he must repeat the process. In order to promote diversification it is suggested that the land be classified into four broad groups in accordance with the land use potential classification (SV 2)

(1) Annual and semi-perennial crop land

(2) Annual, semi-perennial and perennial crop land

(3) Semi-perennial and perennial crop land

(4) Perennial only crop land

and the premium charged should be specified for each group to accord with its potential value.

Once the appropriate premium has been paid the operator should be free to grow any crops within that category and to change his cropping pattern at will, subject only to the maintenance of his land in accordance with legally prescribed conservation rules, which should be drawn up as soon as MARDI can advise on the appropriate measures for the Project Area conditions.

With the introduction of a premium graded according to land potential, the annual land tax could be applied at a uniform rate on the basis of holding size. Such a system would be simpler and more flexible to operate than that now in use. Rates of premia and tax are suggested in Supporting Volume 6. If adopted they would yield a slightly higher revenue overall than that obtained under the existing system.

Non-restrictive alienations along the above lines should appeal to individuals and organisations with initiative and the desire to try out new activities. If the size of such alienations was flexible, designed to suit the operators' available or obtainable labour and financial resources, their technical knowledge and their practical experience, a congenial climate for diversification would be created.

THE AGRICULTURAL DEVELOPMENT PLAN

For purposes of planning development the Project Area has been divided into 50 development units (Development Maps in Map Folder). These units have been located, their boundaries defined and their cropping patterns determined after detailed study of soils, terrain and land use potential information and after consideration of the requirements for communications and settlements.

In order to facilitate the laying out of equitable smallholder settlements, areas have been identified which appear suitable, on the basis of the available survey and level of detail of mapping for sub-division into relatively uniform small lots. Broadly speaking these are areas with large blocks of uniform terrain, soils and crop group potential.

Units with favourable sub-division characteristics and large enough to produce a natural catchment area for a village (4,000-7,000 acres) have been identified on the maps as units suitable for FLDA type of development. Where possible two or more such units have been grouped together to facilitate the phasing of land development and improve the economics of processing.

Insofar as the SMP programme is concerned it has been assumed that the State will allocate these units to FLDA to make up the land package for the international loan application. For development between 1975 and 1980 the identification merely shows suitability for smallholder settlement by a large agency, since the State has not yet indicated its willingness to commit land to any specific agencies so far in advance of the scheduled time of development. If the FLDA is to achieve its already large and expanding national land development programme, forward planning is essential and it is desirable that it should have some advance assurance of the availability and location of new land. It is therefore recommended that the State review their present policy of land alienation to see whether some formula can be found which would provide this assurance to FLDA without infringing the State's existing sovereignty over its land.

In those units suitable for large scale smallholder settlement the villages have generally been placed in the centre of the scheme. The remaining units, which are unsuitable for a uniform pattern of development, may be developed by one operator or be divided among many in unequal lots of a wide range of sizes. They may therefore offer more diverse employment opportunities than FLDA type settlement units, and the villages serving them have been sited as far as practicable to allow residents access to as many of these opportunities as possible. Again, insofar as practicable, units suitable for other agencies have been sited in proximity to FLDA units in order to bring these employment opportunities within easy reach of the families of FLDA settlers.

Within the policy constraints imposed by the Steering Committee the proposed agricultural plan incorporates as many of the above planning criteria as possible. The plan includes two special projects prepared for possible international financing. The first of these is for the development in the SMP period of two-thirds of the Project Area programme by FLDA. The second is for the establishment of a dairy cattle multiplication unit to build up an improved herd of productive milkers with high environmental tolerance. These two special projects are reported in detail in Supporting Volume 6, parts 2 and 3 respectively, and their main features are outlined later in this chapter.

THE PROGRAMME FOR DEVELOPMENT

The Second Malaysia Plan 1971-1975

For the SMP, units covering a gross area of about 75,000 acres (net 68,200) have been recommended for allocation to FLDA. Most of the remaining one-third of the planting programme (34,550 acres) has not been recommended for any particular agency; it has been assumed that development will be shared by several different organisations. However, there are a few units which are small and often dissected by existing alienations or by steep land, but which have good access from areas likely to generate a demand for land. These units have been recommended specifically for smallholder development along the lines of unsubsidised GSA schemes, or by small individual alienations. The gross acreage of these units amounts to some 10,000 acres. There is also an area of 5,900 acres near Kluang, which has been specifically allocated to FELCRA for a resettlement scheme. The crops developed by FLDA and other agencies in the SMP period are:

		Oil Palm	*Rubber*	*Beef*	*Dairy*	*Tapioca*	*Other*	*Research*	*Total*
1971	FLDA	6,900							6,900
	Other								—
1972	FLDA ..	7,800	9,200						17,000
	Other		4,200	1,300	850			850	7,200
1973	FLDA ..	14,600	900						15,500
	Other		4,100	1,300	450	350	350	450	7,000
1974	FLDA ..	11,800	1,800						13,600
	Other	1,750	3,600	1,300	450	1,950	1,650	450	11,150
1975	FLDA ..	15,200							15,200
	Other	1,750	3,850	900	450	1,800	—	450	9,200
Total	FLDA ..	56,300	11,900						68,200
	Other	3,500	15,750	4,800	2,200	4,100	2,000	2,200	34,550

Besides the smallholder units and FELCRA, other agencies suggested include a nucleus estate type of organisation for oil palms and tapioca production; a joint SEDC/private sector beef enterprise; a dairy cattle development unit; a MARDI research station; and a fruit and vegetable enterprise, based on a nucleus estate and processing factory. The last could be developed by the public or private sector or jointly.

The locations of the above developments and their phasing take into account the constraints imposed (*a*) by the logging programme (71,000 acres), which precedes land clearance in Johor Tengah, and its associated timber complex, (*b*) by the unavailability of land with unexpired logging licences (14,000 acres) and land recommended for mineral prospecting, and (*c*) by lack of access. These constraints apply most forcibly in Johor Tengah.

It was also necessary to take into account the need to find 75,000 acres of land suitable for uniform sub-division and settlement by FLDA.

The combined effect of all these constraints leaves little choice of location. All the land available in the first four years has to be developed. This concentrates FLDA development in Tanjong Penggerang, where of 60,000 acres more than 50,000 acres will be planted by FLDA. Of 40,000 acres to be planted in Johor Tengah only 17,000 acres fall to FLDA. These are in four units, of which two comprise a northward extensions of the Kulai complex, and the other two are accessible from the Kluang-Mersing road. The remainder of the developments in Johor Tengah consist, in about equal proportions, of rubber and oil palm enterprises and diversification activities.

The Third Malaysia Plan 1976-1980

This period sees the clearance of the last of the available land in Tanjong Penggerang. Development in Johor Tengah follows the logging programme and consequent opening up of access.

In this period it has been recommended that the land be divided more or less equally between development of smallholder type settlements along FLDA lines and development by a variety of other agencies. The units most uniform and suitable for sub-division have been allotted for FLDA-type settlements, except where they are particularly suitable for diversification activities. The activities by FLDA type and other agencies are:

		Oil Palms	*Rubber*	*Beef*	*Dairy*	*Tapioca*	*Other*	*Research*	*Total*
1976	FLDA-type ..	15,200					700		15,900
	Other	8,000	4,250	1,650	850	—	1,500	450	16,700
1977	FLDA-type ..	10,400							10,400
	Other	1,800	5,650	1,650	450	1,000		450	11,000
1978	FLDA-type ..	10,200					1,500		11,700
	Other	900	1,250	1,650	450	2,750		450	7,450
1979	FLDA-type ..	5,300					1,000		6,300
	Other	1,300	3,100	1,650	450	2,450		450	9,400
1980	FLDA-type ..	11,100							11,100
	Other	3,200	3,400		400	950			7,950
Total	FLDA-type ..	52,200					3,200		55,400
	Other	15,200	17,650	6,600	2,600	7,150	1,500	1,800	52,500

The remaining undeveloped units in Johor Tengah are assumed to be cleared in this period. Separate identification of units suitable for subdivision has not been made. It is not considered that it would be useful to do so, because by this time nearly ten years of research and experiment on new activities will have been completed and it is likely that at least one will have reached a stage when it could attract various types of investing and implementing agency. The activities developed in the period 1981-1987 are:

	Oil Palms	*Rubber*	*Dairy*	*Tapioca*	*Other*	*Total*
1981		2,000	700	350	700	3,750
1982	4,400		1,200		300	5,900
1983	4,400		700			5,100
1984	2,300	4,000				6,300
1985	2,800	1,600				4,400
1986	3,500		2,400	1,000	1,000	7,900
1987		5,800				5,800
Total	17,400	13,400	5,000	1,350	2,000	39,150

PROJECT 1—THE FLDA PROGRAMME

The proposed FLDA programme covering development of land to be cleared in the Second Malaysia Plan period is described in detail in Part II of Supporting Volume 6. This programme covers a gross area of approximately 76,200 acres and proposes the planting of 56,300 acres of oil palms and 11,900 acres of rubber. It is estimated that total development expenditure by FLDA in connection with these projects will amount to $135 million. In addition, other government agencies will be required to provide infrastructure and services to the value of $37 million.

LOCATION AND PHASING

The location, phasing and cropping pattern is summarised in Table 4.3. Of the 56,300 acres of oil palms proposed, 39,300 acres are in Tanjong Penggerang and 17,000 acres in Johor Tengah. All of the rubber acreage proposed is located in Tanjong Penggerang. The details of the locational pattern can be seen on the Development Map. Development is concentrated in Tanjong Penggerang because of land availability and access and development follows the progress of the main Penggerang Highway, moving east and south from the existing FLDA development at Ayer Tawar to the southern end of the peninsula before proceeding south from the existing development at Bukit Aping. The four smaller schemes in Johor Tengah utilise the the available land, taking into consideration broad planning criteria for the region.

ORGANISATION

The area covered by the programme will be divided into 14 units, 13 of which will have central villages. The remaining unit of 1,000 acres will be developed as an extension to the existing Bukit Aping scheme. Initial land clearance and preparation, planting, early crop maintenance and construction of housing and village facilities will be carried out by contractors. Settlers will enter the schemes when houses have been constructed, about one year after crop planting. They will subsequently carry out all field work under supervision. The settlers, aged 18-35 will each ultimately obtain 10 acres of main crop (or its

TABLE 4.3

FLDA, S.E. JOHOR, PLANTING PROGRAMME BY YEAR, REGION AND CROP

Year	Oil Palms		Rubber	Total
	T. Penggerang (acres)	Johor Tengah (acres)	Tanjong Penggerang (acres)	(acres)
1972	6,800			6,900
1973	2,200	5,600	9,200	17,000
1974	11,000	3,600	900	15,500
1975	8,000	3,800	1,800	13,600
1976	11,200	4,000	—	15,200
Total ..	39,300	17,000	11,900	68,200

share equivalent) and a quarter acre houselot plus house. The costs of this development will be borne by settlers. Loans will be provided by FLDA to be repaid out of the proceeds of the project over a period of 15-20 years.

MANAGEMENT

Management on these schemes will be provided by FLDA. Upon completion of all villages the following scheme management staff will be required:

Managers	13
Assistant Managers	24
Senior Supervisors	87
Field Assistants	174
Settler Development Assistants ...	26
Mill Engineers	5
Assistant Engineers	5

The schemes within this programme will be managed as part of the South Johor Region of FLDA with its headquarters in Johor Baharu.

OUTPUTS

Over the period to 1995 the estimated total value of output from schemes in the programme will be $1,000 million. Peak production from oil palms will be reached in about 1983 when it is estimated that 124,000 tons of palm oil and 25,000 tons of kernels, with a combined value of $55 million, will be produced. Peak rubber production is estimated at 10,000 tons in 1994 valued at $11 million. After 1995 early plantings of oil palms will be replaced, depending upon conditions at that time, while rubber will probably continue in production for several further years.

COSTS AND RETURNS

In brief the development costs of the programme are:

	$ million
FLDA	
Agricultural development ...	72.6
Settlers' housing	10.9
Processing facilities	27.7
Scheme management	14.8
Headquarters costs	9.1
Sub-total ...	135.1
GOVERNMENT	
Roads and water	26.4
Social infrastructure	10.1

In estimating the value of this programme to the Malaysian economy, unskilled labour (including that of settlers) has been charged at $40 per month. On this basis and estimating costs and revenues to 1995 the internal rate of return is 18 percent.

Settler Incomes

Oil palms begin to produce a crop about 3 years after planting, or two years after FLDA settlers enter their scheme. On the other hand rubber is not ready for tapping until about 7 years after planting. Thus the streams of income from the two crops are different. Over the period of loan repayment for oil palm settlers with 10 acre holdings (approximately 15 years) estimated average annual incomes are $2,240. At the same time however, it should be remembered that the settler has built up an asset worth about $10,000. For rubber settler estimated average incomes over the repayment period are $2,900.

For comparative purposes the discounted value of the two estimated income streams at the time of entry, i.e., Year 3 of the scheme, were calculated at a discount rate of 10 percent. Results were as shown in Table 4.4. At the expected price levels the two streams are virtually identical in present value terms. Incomes on oil palm holdings are proportionately more sensitive to changes in price levels because of the higher levels of fixed charges for processing, transport and mill amortisation.

Table 4.4

FLDA PRESENT VALUE OF SETTLER INCOME STREAMS BY CROP AND PRODUCT PRICE LEVEL

Product Price Level	*Present Value of Income Stream Discounted at 10 percent*	
	Oil Palms ($)	*Rubber* ($)
Low	13,620	15,160
Medium	18,650	18,500
High	24,190	22,000

PROJECT 2—THE DAIRY CATTLE MULTIPLICATION SCHEME

Introduction

The particular suitability of Johor Tenggara for milk and beef production from grass was pointed out in the Draft Project Report (SV 1). As a result the Steering Committee instructed the Consultants to prepare a report on a dairy cattle multiplication scheme for submission to external agency(ies) for finance and technical aid. This report, which is summarised below, appears as Part 3 of Supporting Volume 6.

An analysis of the future market for fresh milk indicates that the demand in Johor State and Singapore could reach 20 million gallons by 1990. It has been assumed that the farm gate price will gradually fall from $2.75 per gallon to $1.80 per gallon over the next 20 years as production increases. At these prices calculations show that dairying could be highly profitable for both small and large producers if an average herd yield of 500 gallons per annum could be achieved from grass. Such a yield, though much above that given by the Local Indian Dairy (LID) cattle, has been shown by the Central Animal Husbandry Station to be within the capability of cross-bred Friesian × LID cows, which combine this yield capacity with tolerance to heat, ticks and tick-borne diseases. Pure-bred Friesians, under temperate conditions, have a much higher yield potential, but may not achieve it under the environmental conditions in Johor Tenggara, and would certainly need very stringent management.

The Veterinary Department are proposing to establish three cattle multiplication schemes, in Perak, Negri Sembilan and Trengganu respectively, in addition to the central station already operating near Kluang. However, if Johor is to take advantage of its preferential environment

and location in relation to the Singapore market, a specific extra effort is called for to build up an improved herd in the State, and also to train managers and workers in animal husbandry. Knowledge of commercial cattle management is at present virtually non-existent at all farm levels. This fact and the national shortage of suitable LID female breeding stock are the two most important, but by no means the only, constraints to be overcome if a sound industry is to be established. The dairy cattle scheme described in the following section aims to examine and solve as many of these problems as possible.

Outline of the Project

A foundation herd of 3,500 LID breeding females and 120 Friesian females will be purchased between 1973 and 1976 and put in calf using deep frozen Friesian semen. The overall breeding herd will be built up by selection to 2,200 crossbred and 120 Friesian dairy cows and maintained at this level. This herd will be divided into units, each containing about 120 milk cows and the young stock of its own breeding.

Location of the Project

The land to be developed is located in the north of the Project Area, a few miles east of Kluang and alongside the main road from Kluang to Jemaluang. The gross acreage required is 2,700 acres to give 2,335 acres of planted pasture and fodder. Land clearance will start in 1972.

Management and Operation of the Project

It is recommended that a team of managers and herdsmen should be brought together under a technical aid programme. The team should also contain a farm management specialist to help with initial detailed planning and later to evaluate and report on the results from the scheme, building up an essential body of data and farm models for use in expansion programmes for dairy farming generally.

Each unit will be under the control of a head herdsman, whose duties, in addition to the routine management of the unit, will be to ensure that the unit's labour force receives a thorough practical training in the arts and skills of stockmanship. This training function is of fundamental importance to the future success of the dairy industry as a whole and a larger labour force than would be required for normal commercial operations has been assumed in order to provide a pool of skilled herdsmen and junior extension workers for the expanding industry. Additional Malaysian management personnel have also been included who will be able to take over the running of the scheme as technical aid phases out.

Production from the Project

Output will consist of; surplus crossbred heifers for entry into new dairy or beef breeding units; steers and old cull cows for beef; and milk. At the high culling rates assumed maximum output of stock is reached by 1979. From that year the project will turn out every year,

380 crossbred dairy heifers

1,000 beef steers

340 heifers for beef breeding

340 cull cows for beef

Milk production is expected to rise from 135,000 gallons in 1974 to over a million gallons per year from 1984. The value of this total output is estimated to be over $3 million per year.

Costs

Annual costs after the development period are estimated to be in the region of $1.2 million per year and net total costs during the development period 1972-1976 inclusive are $5.7 million. The total foreign exchange portion of operating costs is expected to be about 20 percent of total costs. Total foreign exchange development costs are in the region of $2.8 million up to 1980, of which 75 percent will be incurred by 1976.

Rates of Return

The financial rate of return is calculated at 19 percent. A sensitivity analysis shows that a 30 percent drop in milk price coupled with 10 percent increases in management, labour, pasture and building costs reduces it to 8 percent.

The social rate of return, which values unskilled labour at a shadow wage of $40 per month and deletes major transfer payments, is 24 percent.

Relationship of the Project to Development Authority

Initially the scheme should be implemented by the management team, with the General Manager being directly responsible to the Chief Executive of the Development Authority or his Deputy, whose task should be to control and coordinate financial and policy matters as they affect the aims of the scheme. Later, if and when a national Livestock Development Authority is established, the scheme should be transferred to that body, close liaison being maintained with the local Development Authority on matters affecting expansion in the Project Area.

The output from the project from 1979 includes 380 crossbred dairy breeding heifers annually. Whether these are distributed to commercial dairy farmers or retained in a second or expanded multiplication unit cannot be decided now. It must clearly depend on the success achieved in the initial scheme in solving existing constraints on profitable commercial development, not least in the training of competent managers and herdsmen. However these crossbred heifers and their progeny will continue to multiply themselves wherever they are located, and if it is assumed that the annual rate of increase (9 percent compound) maintained by these stock is the same as that achieved within the initial project, the overall number of crossbred breeding cows would increase as follows:

	Within initial project	Surplus	Total
1980 ...	2,300	700	3,000
1985 ...	2,300	2,300	4,600
1990 ...	2,300	4,800	7,100
1995 ...	2,300	8,600	10,900
2000 ...	2,300	14,500	16,800
2005 ...	2,300	23,500	25,800
2010 ...	2,300	37,500	39,800

The project makes a significant contribution to the size of the national dairy herd, particularly after 1995. In view of its importance it is essential that the project should be developed within the context of the national programme.

PROJECT 3—MIXED FARMING DEVELOPMENT

Introduction

Among the crops and animals that are considered worthy of early introduction are tapioca, pepper (very limited acreage), beef and dairy cattle, goats, fish. Some of these could be developed in conjunction with rubber and oil palms to provide early income during the immature period of the main crop. In the present state of knowledge inter-cropping of the rubber and oil palms cannot be unreservedly recommended, and separate land should be devoted to the subsidiary and main activities.

Mixed production holdings multiply many of the management problems and would be difficult, if not impossible, to implement on the same scale and settlement pattern as FLDA standard schemes. To take the best advantage of the opportunities offered by a choice of activities it is necessary to keep a flexible approach with regard to holding size, which must be permitted to range according to the income potential and labour requirements of the chosen activity in relation to the available inputs and needs of the operator.

Several development units have identified, which are suitable for a variety of activities. These development units provide an opportunity for encouraging diversification by smallholders with initiative and some resources of their own. In this context a smallholding is defined, as it is by the Rubber Fund Board, as a holding of less than 100 acres.

Evaluations have been made of the following types of mixed holding:

(1) a 20-acre rubber/beef holding

(2) a 20-acre holding containing 10 acres oil palms, and 10 acres of tapioca. After year 9, gradual replacement of 4 acres of tapioca by 1 acre of pepper and 3 acres of fodder for a housed breeding herd of 30 female goats.

(3) a 30-acre holding, composed of 15 acres of oil palms, 10 acres of grass for beef and 5 acres of fish ponds.

(4) a 40-acre holding, composed of 20 acres of oil palms, 10 acres of tapioca and 10 acres of grass for dairy cattle.

(5) a 40-acre holding, composed of 16 acres of oil palms, 8 acres of tapioca, 16 acres of sorghum followed by soyabeans.

These holdings could all be run by typical families, provided that contractors were used for initial land clearance and planting of the tree crop, for harvesting of oil palms, and for some of the tapioca operations. The gross incomes on completion of development range between $6,700 per annum from the rubber/beef holding to over $12,000 from the holding with dairy cattle.

Many other enterprises e.g. poultry, vegetable and fruit production can also be considered, but the above examples suffice to show the possibility of establishing agricultural businesses, based on a range of activities and worked mainly by family labour. Until further research has been carried out by MARDI, some of these activities, e.g. annual grain and legume crops, have a high risk element. Cattle enterprises must await cross-breeding programmes, and pepper, small livestock and fish require only small acreages to satisfy the predicted demands. The annual crop with the greatest initial potential for development in conjunction with oil palms and rubber is tapioca. It is recommended that such a development should be initiated either by a public sector agency such as MARA or SEDC or by a joint public/private sector agency. The smallholder production should be organised around two nucleus estates, one growing oil palms and the other tapioca.

Location of Project

The project has been located near the proposed new town in Johor Tengah, where the soils and terrain are suitable and where accessibility to urban amenities and processing facilities will be easy. The land to be developed lies in the development units of Pengeli Kechil; Ulu Sebol and Ulu Chenas. (Development Map). The net area of suitable land amounts to 16,100 acres. It is recommended that this be developed as follows, starting in 1974:

	Acres
Tapioca nucleus estate	2,500
Oil palm nucleus estate	2,500
Mixed farms	7,600
Oil palm (2,000 acres) and rubber (1,500 acres) holdings	3,500
	16,100

Recommended Method of Development

The implementing agency should announce the establishment of the two nucleus estates and construct the attendant processing facilities. Applications should then be invited, preferably from bona fide farmers, for contracts to supply these factories from land around them. Holdings may vary in size from a minimum of 20 acres (with at least 10 acres in each crop initially) up to 100 acres. Applicants should be able to put up some part, e.g. 25 percent, of the capital required and to obtain loans from Bank Pertanian or commercial banks for the balance.

Initial land clearance and planting of oil palms would be carried out by contractors under the supervision of the nucleus estate. The planting, maintenance and harvesting of tapioca and the maintenance and harvesting of oil palms would be the responsibility of the farmer, subject to provisions under the production contracts.

Processing Requirements

Tapioca processing capacity will be needed for the nucleus estate and half the mixed farm area, a total of 6,300 acres, which may be expected to yield 75,000 tons of roots. It is suggested that a factory with 45,000 tons annual throughput capacity be built initially and expanded as production builds up.

Processing requirements will be needed to cater for 8,300 acres of oil palms. A factory capable of handling 20 tons per hour of fresh fruit bunches will be needed.

Costs and Returns

The nucleus estate "project", that is the 5,000 acres of tapioca and oil palms estates and 7,600 acres of small mixed farms, is estimated to have a social rate of return of 26 percent per annum for the farm operations, based on ex-farm values for tapioca and oil palm fresh fruit bunches. The calculation excludes infrastructure costs since the latter will be provided for the new town and timber complex. Estimated capital requirements for the two estates are $5 mn., $1.7 mn for tapioca and $3.3 mn for oil palms. The tapioca factory would cost approximately $1.5 mn and the oil palm mill $3.3 mn. Capital needs for smallholders cannot be assessed accurately but are thought likely to be in the region of $450 per acre or $3.4 mn and smallholder gross margins to average about $200 per acre. (The Working Paper *"The Development of Mixed Enterprise Holdings"* elaborates on the preceding section).

PROJECT 4—BEEF PRODUCTION

Introduction

During the course of the Johor Tenggara investigations, several foreign investors with experience of beef production and with capital to develop ranches have sought information about the suitability of the Project Area for this activity. SEDC has also indicated its interest in investing in beef production.

There is no doubt that the environment is suitable for the raising of beef, mainly from grass. The rate of grass growth will demand the use of intensive systems of production, with high stocking rates; problems will be different from those that prevail in the traditional large ranches of the arid zones, and appropriate management methods will need to be worked out. However, knowledge of beef production in conditions similar to those of the Project Area is available from, for example, the Caribbean, the Philippines, Central America and Queensland. MARDI is proposing to set up a beef unit at its new research centre in Johor Tenggara.

The proposed dairy scheme in Johor Tengah will have an output of beef calves, which it is proposed initially to rear on the scheme, but which could later be distributed to farmers for rearing. There will also be an output of cull dairy cows from the scheme, which would be suitable breeding stock for crossing with beef bulls. Such animals could also be distributed to small farmers, who could without great difficulty rear the calves on their dams, and sell them back as weaners at 6-7 months old to larger enterprises with the necessary knowledge and facilities for rearing and fattening. Thus the introduction of beef to the Project Area could add in time to the diversification of smallholder farming.

Initially it is recommended that production should be established by bringing in interested foreign expertise, who could provide the foundation stock and some of the working capital. It is

suggested that suitable arrangements might be made for a joint enterprise between the private investor and SEDC, which already has some capital to offer in the form of land. A ranch of 5,000-6,000 acres is considered to be the minimum size for economic viability. (W.P. *Beef Production*).

Location of Enterprise

Two development units are suggested for beef production enterprises, one in Johor Tengah (Sisek) and the other in Tanjong Penggerang (Ulu Silika).

Sisek: 5,500 acres gross: This area is in the south east of Johor Tengah, between S. Pelepah and S. Lebak, and can be reached across S. Pelepah from the Kota Tinggi-Lombong road. The area is rather isolated and the available labour supply is limited, which reduces its suitability for crop husbandry. The area is rather small on its own for a ranching enterprise, but it could be developed in conjunction with the second area at Ulu Silika. It is recommended for development over the four year period 1972-1975.

Ulu Silika: 7,400 acres gross: This area lies inland from the Tanjong Penggerang coast between Tanjong Siang and Tanjong Kelesa. It is bounded on the north by the proposed Padang Mulud nature reserve and inland by a poorly drained area of muck soils. Scattered occurrences of silica sand are found in the eastern part of the area, concentrated in low coastal dunes. The western part is higher, rather rough and broken topography, suitable for grazing, but for very few arable crops. It is recommended, therefore, for development as a beef ranch over the years 1976 to 1979. The land has already been alienated to SEDC and a partner for the mining of the silica sand, so the new enterprise could well be suitable for a joint venture between SEDC and private beef producers.

Outcome of Project

The calculated rate of return on a beef enterprise of 5,000-6,000 acres is about 17 percent. Employment creation is low. The two ranches between them may be expected to employ about 30 men directly. For this reason the number of ranches has been limited to the two proposed, and as there is an abundance of undeveloped land in Malaysia this disadvantage in employment terms is not serious, particularly when weighed against the advantages of direct import of expertise and willingness to take financial risks.

POSSIBLE PROJECT, FRUIT AND VEGETABLES

There has been considerable official interest in recent years in the possibilities of developing fruit and vegetable production. The climate of Johor Tenggara is certainly suitable for the production of green vegetables like beans and for fruits that do not require a definite dry season to make them flower. But large scale commercial production of these perishable commodities would be very risky without associated facilities for preserving surplus production. At present the Food Technology Division is testing several processed products, among them tropical fruit salad and guava, passion fruit and soursop juices.

Until satisfactory processed products can be produced, either by freezing, drying or canning, it is premature to evaluate the profitability of a fruit and vegetable production project. However, it is considered worthwhile drawing attention to one development unit (S. Chemaran) which would have several advantages from the point of view of production of these crops when the processing problems have been overcome.

S. Chemaran, 3,400 acres gross, contains 1,700 acres of gently sloping, deep and well drained soils of the Marang series, which are suitable for all but the most demanding of crops. The unit is crossed by several streams, from which overhead irrigation facilities could be developed. It lies close to the proposed tourist project and new town, which could have a substantial demand for fresh vegetables and fruit.

It is recommended that this fertile and potentially valuable farming area be developed over three years from 1974, when it becomes available on the completion of prospecting. Consideration should be given to setting up a joint private/public enterprise, consisting of a processing factory and a nucleus fruit and vegetable estate. Later, contracts could be made with surrounding growers to increase supplies from villages and river valleys in Tanjong Penggerang.

The possible form of development is described in more detail in the Working Paper *"Fruit and Vegetables"*.

INLAND FISHERIES

Stocking of Reservoirs

The Consultants were specifically requested by the Steering Committee to make recommendations for the stocking of reservoirs, of which three are proposed for safeguarding future water supplies for domestic and industrial use. The stocking of large bodies of water is a complex procedure requiring on-site investigation of each reservoir to determine the best method for the specific conditions. Recommendations are made (W.P. *"Inland Fisheries"*) for the introduction of two species of tilapia and possibly the silver carp for the control of vegetation and to provide some sport.

Fish Farming

In Johor Tengah there are many suitable sites for the construction of fish ponds in some of the reaches of the S. Semberong, S. Pengeli and S. Jengeli and in some tributaries of the S. Kahang. In Tanjong Penggerang erratic flow conditions in streams with small catchments, and salt water intrusion in some otherwise suitable valleys, reduce the opportunities. However, the S. Sedili Kechil has wide valleys which are highly suitable for fish farming.

Various systems of fish culture are discussed in detail in the *"Inland Fisheries"* Working Paper. Extensive systems, based on the production obtainable by the proper use of inorganic fertilisers, but without expensive supplementary feeding, are simple and profitable and are recommended. Two schemes have been examined: (1) a short term scheme in which 950 fish per acre are raised in 6 months, and (2) a longer term scheme in which 550 fish per acre are kept in the pond for a year and are harvested at heavier weights.

Short term extensive scheme: evaluation of a 7-acre unit, which is considered to be a suitable size for one man to manage as a full time operation, indicates a likely rate of return to the enterprise of 15 percent. This is based on a yield per acre per stocking of 1,250 katis of a mixture of tilapia, lampan jawa and grass carp.

Longer term extensive scheme: a 7-acre unit rearing various speciality carp is much more profitable. Based on a yield per acre per stocking of 2,340 pound of fish and a declining price of 2 percent per year, the enterprise shows a rate of return of 27 percent.

The longer term scheme, though much the more profitable, contains much the greater risk element, both at stocking time, when the imported fry may have a high mortality, and again at harvest time, when the oxygen requirement of the large fish may be dangerously close to the maximum oxygen content of the water.

The short term extensive system may, therefore, be the more suitable for the majority of smallholders, particularly if the enterprise is a part time one, integrated with other mixed activities such as, the oil palm and tapioca scheme already outlined.

ORANG ASLI RESERVES

The Consultants were also asked to make recommendations for agricultural development in the orang asli reserves, of which there are two within the Project Area and a third just outside

the boundary, to the north of the Kota Tinggi-Sedili Kechil road:

	Population (1969)	Acres
Semangar (Johor Tengah) ...	100	150
Sungei Layau (Tanjong Penggerang)	238	2,000
Sungei Selangi (Kg. Mawai) (north of the Tanjong Penggerang boundary)	40	70

All these are settlements; according to information from the Department of Orang Asli there are no orang asli nomads in or near the Project Area. Some of the Semangar group have, however, moved from the reserve to the valley of the S. Linggiu and do not appear to be permanently settled. They have no land permanently under cultivated crops. Specific recommendations for the two settlements within the Project Area are given below.

Sungei Layau

The larger settlement at Sungei Layau on the west side of Tanjong Penggerang is a resettlement of orang asli (orang laut, "sea people" or fishermen) originally from the west coast of Johor. Although within the Project Area it is reserved land and therefore does not fall into any of the agricultural development units. The reserve occupies 2,000 acres of which 500 are being planted to coconuts, giving roughly 10 acres per family. Very substantial damage to coconut seedlings has been caused by wild boar, possibly moving out of the cleared areas of Ayer Tawar.

Road access to this reserve could soon be opened. An area of 7,000 acres immediately to the north (Sungei Semenchu) is proposed for development as an FLDA scheme under oil palms in 1971/1972. This scheme will be served by secondary roads from the main Tanjong Penggerang highway. The reserve seems far enough from the tourist resort area on the east coast for unwanted intrusion to be avoided.

The Department of Orang Asli proposes, at present, to retain 1,500 acres of the S. Layau reserve as jungle, to be opened up as the number of families increases.

This land is suitable for a wide range of crops including tapioca, grains and pulses, grass, oil palms, pineapple, rambutan, durian and most other local fruits, rubber and coconuts. The following recommendations are made:

(*a*) Coconuts should be maintained as a crop. Later plantings could be of high yielding hybrids, if these prove successful in trials;

(*b*) The feasibility of introducing other activities, for example, fruits, vegetables, oil palms, rubber, poultry, goats, cattle, into this orang asli settlement should be considered if in keeping with their culture. Their introduction would require technical guidance and assistance with planting and cultivation and arrangements for processing and marketing. Perishable products should not be planted until adequate processing and marketing facilities are available. These facilities should be provided preferably by other local producers in cooperation with the Department of Orang Asli: in oil palms by FLDA from the adjacent scheme and by fruit and vegetable producers possibly in the Chemaran area to the east;

(*c*) Measures should be taken by the Game Department and other appropriate agencies including, perhaps, the Army, to reduce the damage caused by animals to crops in the reserve, which may increase with the clearance of adjacent areas;

(*d*) At an appropriate stage, educational, health and other facilities provided in nearby new villages, the nearest probably being in the FLDA area, should be available to the inhabitants of the reserve;

(*e*) This area comprises good agricultural land and would be suitable for settling more orang laut from elsewhere in the State of Johor.

The orang darat ("land people") in the reserve at Semangar have areas under rubber and orchards. The group that has moved up the S. Linggiu has no land permanently under crops. They gather durians from trees to which they claim title.

The area surrounding the reserve and the southern part of the S. Linggiu valley will all be developed for agriculture under the Master Plan. After discussion with the Department of Orang Asli it is recommended that the present 150 acres reserve be enlarged to 500 acres to allow for the resettlement of those orang asli now in the Linggiu valley, who should be encouraged to return. Those who do not may move into forest areas in the upper Linggiu catchment, which is not to be developed and will remain as forest. The dam that may be constructed on the S. Linggiu for water storage, will, at the site suggested, flood not more than 9 square miles, and ample land will remain for the orang asli.

The area adjacent to the Semangar reserve is good agricultural land suitable for a wide range of crops including tapioca, grains and pulses, grass, oil palms, pineapple, rambutan, durian and most other local fruits, rubber and coconuts. The Master Plan assumes that this area will be developed mainly to oil palms or tapioca depending on terrain. Of these, tapioca might be best suited to the orang asli, but this will depend upon whether processing facilities are developed.

AGRICULTURAL SUPPORTING SERVICES

As development proceeds it will be necessary to establish and/or expand some of the necessary supporting services to producers. Of particular importance will be the provision of marketing and sometimes, processing facilities, credit, advice and training. The most suitable forms of organisation for providing these services must take into account the nature of the activities being developed, and the type and location of the production agencies that are to operate in the Project Area.

At least 75 percent of the proposed oil palm production is likely to come from FLDA schemes. At present the Authority itself organises the collection and transport of its settlers' fresh fruit bunches through contractors, and undertakes the processing and marketing functions. The present arrangements work satisfactorily and it is assumed they will be continued on new oil palm schemes in the Project Area. It is also assumed that, when settlers have paid off their debts and become either the sole or co-operative owners of their land, satisfactory arrangements will be made for these present FLDA processing and marketing services to be continued, either by the Authority itself or by some other agency.

The processing of the non-FLDA production may (but cannot necessarily) be provided by extension of FLDA factories. Additional factories of appropriate capacities will sometimes need to be located to serve these areas; such factories could be suitable investments for wholly public or private interests and for joint ventures. One satisfactory form of processing and marketing organisation could be the nucleus estate system. In this the processing agency would grow, at least initially, enough oil palms to guarantee a minimum economic throughput to the factory, and would obtain further supplies from contract growers in the neighbourhood. This system has been recommended for the mixed farming and fruit and vegetable projects already outlined.

For rubber on FLDA schemes it is assumed that arrangements similar to those outlined for oil palms will continue to be made. From non-FLDA areas the first rubber will be produced in 1980. Larger producers will undoubtedly continue to make their own arrangements for processing and marketing. The Rubber Research Institute's (RRI) Smallholders Advisory Service should be made responsible for catering for new smallholder production, either by assisting its absorption into existing processing facilities or by sponsoring the construction and operation of additional appropriate facilities.

Tapioca is similar to oil palms in its bulkiness and should be processed near the production centre. A nucleus estate with factory capacity to serve the estate and surrounding growers is a necessary prerequisite to provide profitable markets and should be sited near Johor Tengah new town.

There could be substantial increases in the amount of beef, mutton and pork produced in the Project Area, (W.P. *"Meat Marketing in Johor"*). Most of the beef will initially be produced by three large units, either directly, or possibly on contract repurchase from smaller farmers. These large units can be expected to open up their own marketing channels in the first place. Later, if, a Livestock Development Authority is established it could well take over the arrangements for marketing. The quantities of beef, however, are unlikely to warrant the erection of rural slaughter houses. Consumption of beef is very low in the rural areas, and beef for urban consumption and export will best be slaughtered close to market centres or export outlets. It is understood that official consideration is being given to the establishment of a central slaughter house in Kluang, and one such centre will be more than enough to handle the Project Area production. It is however open to question whether Kluang will be the best site for the slaughter house, especially as another is believed to be planned for construction in the town of Malacca. If this is so it is recommended that consideration be given to building the Johor State slaughter house in Johor Baharu instead of Kluang.

Consumption of pork already takes place in or near the various production areas. Production of pork and of goat mutton can be expected to increase, particularly in areas like those round the Johor Tengah new town. It seems likely that slaughter facilities may be needed in some of the master villages and towns before the end of the Development Plan period. The provision of such facilities by the private or public sector should be permitted under licence from the appropriate local authority.

The quantities of milk that will be produced in the next two decades should easily be marketable through the development of the existing trade. On farm chilling will be required to prevent deterioration of the milk until the trade preserves it by pasteurisation or ultra-heat treatment.

For fruit and vegetables large scale production will best be centred round a processing factory; this can satisfactorily be developed along the lines of the nucleus estate as outlined for oil palms and tapioca.

Credit

FLDA provides the necessary development credit for its settlers on all schemes, and it is assumed that it will continue to do so. For non-FLDA areas, wherever the activities are developed round a central processing organisation or a nucleus estate with contracted suppliers, the central organisation can be a satisfactory source for either supplying credit or for channelling funds provided by the Bank Pertanian or other lending agency. Credit for oil palms, tapioca, fruit and vegetables for canning, and milk production enterprises could be provided in non-FLDA areas in this manner.

Credit for future rubber producers, and for farmers initiating new enterprises such as meat production and fish culture, is less easy to arrange because of the difficulty of enforcing any sales contract and so ensuring loan repayment. It is suggested that one solution could be to channel credit through Farmers' Associations, which could assist in scrutinising and assessing the loan applications in the first instance, and stand surety for at least part of the loans. Credit from such bodies as MARA, SEDC and the Bank Pertanian could be channelled through these Associations as could funds derived from the Rubber Replanting Board Fund "B".

Extension Services

FLDA schemes during the period of debt repayment, are organised and managed on similar lines to an estate labour force. Once the debt repayment period is over, field services will be required to ensure the maintenance of good standards of crop husbandry and to organise harvesting programmes. For oil palms this service can best be provided through the processing organisation, and it is recommended that some

of the FLDA field staff should be retained in that organisation to carry out these advisory duties.

In non-FLDA areas for oil palms and other activities organised round nucleus estates or processing centres it is recommended that these central organisations provide trained field staff to advise their contracted growers, and to organise the harvesting programmes. It is recommended that the RRI Smallholder Advisory Service be expanded for rubber on non-FLDA schemes and on FLDA schemes when debt repayment is completed.

Some increase in the Department of Agriculture cadre of extension officers at Junior Agricultural Assistant level will be required for advice on activities such as grain crop, meat and fish production, which are not organised round central service agencies.

It will also be necessary to have a few assistants to advice farmers on the implementation of conservation works, when MARDI has established appropriate measures. These measures should be incorporated in a code of statutory regulations, under which the agricultural service would report operators failing to carry out the measures of the Lands Office, which would be responsible for taking any action under the law.

Most of the new enterprises in the Project Area will be specialised undertakings in which the organisation of production can well be in the hands of a necessary service agency. This has the following advantages:

(1) It helps to ensure product quality control. Rejection of sub-standard produce is the most effective way of maintaining desirable standards by farmers. At the same time it is not in the interest of the processor that produce should be unfit for his use. Thus there is a strong identity of interest between the farmers and the advisory employees of the central organisation. It is profitable to both sides to obtain the best possible outcome from the farm.

(2) The junior field staff need to learn the production requirements of one, or at most a few, activities. Although it may be desirable for such men to hold the certificate of agriculture, this is not essential. What is required is a good practical knowledge of the specific enterprise, and this is best acquired by training given on the nucleus estate by the organisation. The essential qualification for applicants for this training is an aptitude to learn and later to demonstrate special skilled jobs such as propagation and pruning of fruit trees and milk hygiene requirements.

(3) The establishment of field services by individual agencies is likely to lead to a greater number of people being employed in advisory work than if a major expansion of the Department of Agriculture were undertaken. The costs of these services should be regarded as an essential and integral part of processing and marketing costs, to which they will add little.

In view of the State's sovereignty over land in the Project Area it is not possible to make firm allocations of land to specific organisations; nor would it be desirable to do so in view of the length of time over which planning is concerned. This reduces the precision with which the manpower requirements for management, field supervision and advisory services can be assessed. Certain development units have been identified as suitable for FLDA and a few have been specified as suitable for smallholders, and in order to give some estimate of the order of manpower requirements, it is assumed that these units will be developed in accordance with this indicated suitability. No specific implementing agency recommendations are made for the other units. However, their suitability for specific activities has been identified, and, after examining the cropping pattern assumed for each development unit, a possible organisation mix has been assumed. Table 4.5 gives an estimate of the order of the agricultural management and field supervisory requirements.

TRAINING

FLDA at present undertakes the training of its own field staff, and is assumed to continue to do so. It is suggested that an additional training centre be established to train the new staff required in South Johor, since developments here will probably constitute about one-third of the total FLDA programme in the next five years.

FELCRA and estate type organisations are also assumed to continue to recruit and train their own staff, and it is recommended that enterprises providing processing or other services to contracted producers should also undertake to train their own field staff. As pointed out in the previous section the essential qualification is a sound practical foundation, and wherever a nucleus estate can be incorporated in the organisation this clearly the most suitable place to train the supporting field staff.

On the diary cattle development project there will be one vital training programme to be carried out, which is not covered by the field staff so far considered. This is the training of Malaysians, and in particular Malays, as stockmen. Such men will be required in the early years to work on the multiplication scheme and later there will be a demand for them on commercial dairy farms as these become established. Some of the trainees may in time decide to develop their own dairy farms.

TABLE 4.5

AGRICULTURAL MANPOWER REQUIREMENTS—MANAGEMENT AND FIELD SUPERVISION

Implementing Agency	*Acres*	*Staff*	*1971-75*	*1976-80*	*1981-85*	*1986-90*	*Total*	*Organisation making provision*
FLDA	124,000	Managers	13	10			23	FLDA
		Asst. Managers ..	17	21	6		44	
		Sen. Supervisors ..	63	73	13		149	
		Field Assistants ..	125	147	28		300	
		Sett. Dev. Asst. ..	14	26	6		46	
FELCRA	6,000	Manager	1				1	FELCRA
		Asst. Managers ..	2				2	
		Supervisors and Field Assts.	10				10	
Estates (including beef ranches)	56,000	Managers	2	8	6	3	19	Estate
		Asst. Managers ..	3	10	8	5	26	
		Field Staff	9	36	30	20	95	
Service Centres (with or without nucleus estimates and including dairy scheme)	42,000	Managers	4	1	1		6	Service Centre
		Asst. Managers ..	5	−2			3	
		Supervisors	35	6			41	
		Field Assts.	7	15	13	10	45	
Smallholders (rubber) ..	18,000	Asst. Rubber Instructors	1		1		2	R.R.I.
Smallholders (mixed activities)	4,000	Junior Agric. Assts...	1	2	1		4	Dept. of Agriculture

In addition to the above requirements there will be a need for 8 engineers and 8 assistants to run new oil palm factories.

At the assumed rate of growth of the crossbred and pure bred Friesian herds, it is estimated that 4 fully trained herdsmen will be required by 1975 within the scheme. Between 1976 and 1983 about 240 trained men will required for the assumed rate of expansion. It is likely that the turnover in the first two years of training could be high, and 30 percent and 10 percent losses have been assumed in these two years respectively; thereafter losses will probably be negligible. The training of a competent stockman can be expected to take from 3-5 years. In order to meet the requirements in the Project Area up to 1983 the following intake of trainees will be required:

1973	... 63	1977	... 22
1974	... 55	1978	... 61
1975	... 73	1979	... 47
1976	... 39	1980	... 45

Beyond this period the numbers taken in for training will depend on national rather than Project Area considerations, since by that time there are likely to be enough experienced stockmen on the various farms to cater for the likely Project Area dairy developments. Development of machine milking and management techniques may be expected to result in time in a rising ratio of cows to stockmen. On the other hand if the centre has achieved a reputation for producing good stockmen it could be desirable for it to become a national training centre. Decisions of this nature should be made by the suggested Livestock Development Authority at the appropriate time. Until such time it is suggested that for present planning purposes an annual intake of 40 trainees per year from 1981 be assumed.

Youth Schemes

Youth settlements as at present implemented, that is as a form of low cost settlement, are not recommended. The reasons are detailed in Supporting Volume 4. Briefly schemes often appear to be based on unsuitable enterprises and the risk element is largely carried by the youths. If the objective is simply to find employment for young men, it seems more desirable that they should be absorbed in the general rural community, for example in youth brigades as is now done by FLDA. A measure of priority to youth can also be given by weighting selection criteria to favour their intake into schemes.

Presumably, however, the main objective is to train youths to take up new opportunities. This can best be done by involving them directly in these new activities, but without undue risk to themselves. The new potentially high income earning activities based on expertly managed nucleus estates, e.g., the dairy scheme, are obvious centres for training young men, and during their apprenticeship they should be paid an incremental wage that fully reflects the value of their labour and increasing experience. This should help to attract youths, for whom the traditional activities apparently have little appeal, into the agricultural sector.

chapter five
TOURISM

THE PROPOSAL

Opportunities for the development of the recreational potential of Johor Tenggara are most favourable. Its potential arises because Tanjong Penggerang has the nearest suitable beaches to the growing Singapore market and will become readily accessible as a result of the early development of the region and the imminent construction of the Penggerang Highway. The early building of a recreational complex costing around $15 million including a hotel, weekend homes, a golf course and other amenities, to open in 1975, is proposed as a first stage of the development of a tourist resort, which by 1990 could provide some 10,000 jobs.

THE MARKET FOR TOURISM

The main demand for holidays in the state of Johor will come from residents of Singapore. Life on that island is becoming more urban and more

expensive; the few beaches are overcrowded and the sea around the city is polluted. But more and more Singaporeans have the time and money to enjoy holidays away from the island, and their mobility is growing with the rapid rise in car ownership. Already their search for rest and relaxation takes them to Port Dickson, Penang and the Cameron Highlands. Day trippers visit Jason Bay and Mersing, at present the only accessible beaches on the east coast of Johor. If this potential demand from Singaporeans is to be fully exploited, the recently introduced immigration controls should be implemented in such a way as to cause the least possible delay and inconvenience to visitors.

In 1970 Singapore received about half-a-million visitors from Australia, Europe and North America; the number is expected to increase rapidly in the next few years. Many of these are "package" tourists spending a few nights in several centres in South East Asia. Others are travellers combining business with relaxation and sightseeing. Tourist developments in Johor could expect to attract growing numbers of these visitors especially by offering extensive beaches, clear water, and a rural setting as a contrast to the urban environment of Singapore.

International comparisons of the relationship between per capita income and recreational travel suggest that there are now about half-a-million potential tourists living in Singapore and that by 1990 there may be almost two million. There are 440,000 people belonging to families owning a car and by 1990 there may be 1.6 million.

When the holiday habit gains ground in a country most people do not travel far from home. The development of tourism in an area depends on its accessibility to potential visitors, however attractive the natural features of an area and however much is invested in infrastructure and facilities. The most popular destinations for tourists from Singapore are likely to be in the State of Johor.

As Johor Baharu increases in size and prosperity, many of its citizens too will seek attractive destinations for day trips, weekends and longer visits. Developments in Johor Tenggara will also attract visitors from other parts of Johor State and growing numbers of international visitors.

RECREATIONAL RESOURCES IN JOHOR

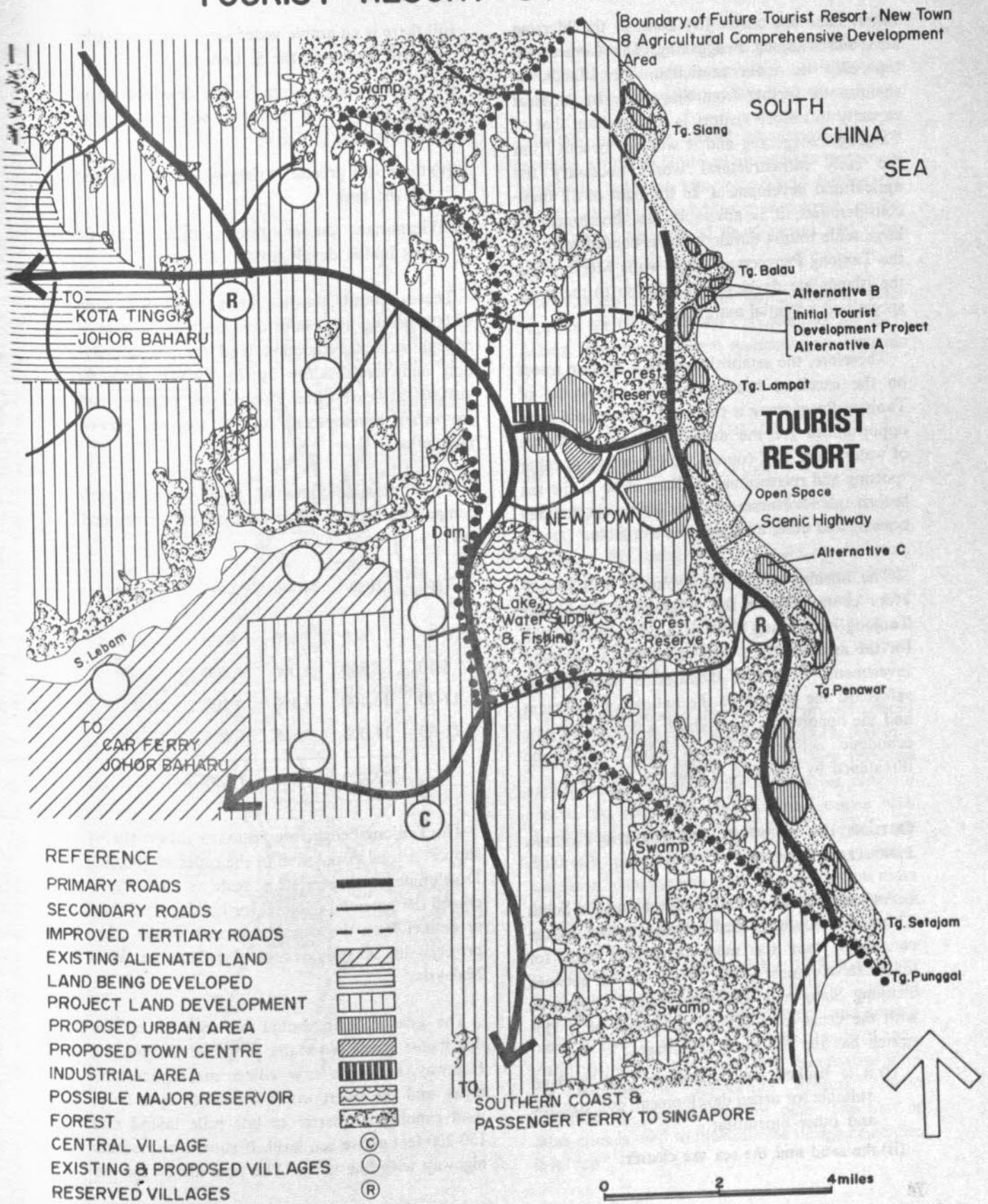
There is no shortage of suitable sites and imaginative ideas for tourist development in Johor to meet these likely demands for holidays. Several tourist projects are being promoted outside the Project Area, notably in Johor Baharu, Endau, Mersing and the neighbouring islands, and inland in the west and north of the State. A rational ordering of priorities in relation to market considerations and development costs is needed both to secure the best return on investments and to ensure the potential demands are realised.

Developments in and around Johor Baharu should be designed to enhance its role as a regional centre and State capital. Though they will continue to attract an expanding number of tourists from Singapore and abroad, they are meeting a different demand from that of holidays in a non-urban environment. This demand cannot be met in Johor Baharu itself.

Resorts in the forested mountains of Johor Tengah, and elsewhere in the State, will be expensive to develop and can provide only a small amount of accommodation in relation to the infrastructure needed to support them. Extensive forest reserves are needed in Johor Tengah to conserve soil, water and wild life. The area is suitable for a national park, but the development of additional tourist amenities should await the completion and successful operation of similar schemes already under way in the more mountainous northern states. Johor Tengah could then have a hill station at over 2,000 feet on Gunong Blumut with a golf course and nature walks; other amenities especially on the proposed lakes on the S. Linggiu and S. Kahang; and an extension to the existing restaurant and chalets at Lombong Waterfalls where an hotel, lake and golf course could be established above the falls.

The east coast provides the best opportunity of meeting the growing demands for holidays away from home and for new forms of recreation in

TOURIST RESORT STRUCTURE PLAN



Johor. Here the choice lies between the Mersing area and Tanjong Penggerang. The former and especially its main attraction, the islands, is significantly further from Singapore. Its physical capacity to absorb visitors is smaller than that of Tanjong Penggerang and it will not benefit from the early infrastructural works necessary for agricultural development. In the light of all these consideraions, it is advisable that investment in large scale tourist development is concentrated on the Tanjong Penggerang coast, while Mersing and the islands are developed in relation to the more specialised potential market.

Therefore, the establishment of a seaside resort on the excellent beaches on the east coast of Tanjong Penggerang is proposed. This would have opportunities for the development of all forms of water sport, golf courses, and a variety of other sporting and recreational facilities close to the sea or just inland. Numerous sites for hotels, holiday housing and other amenities are available.

The opening up of the peninsula will in any event cause pressure for development along the Tanjong Penggerang beaches. A development plan for the area, together with government-sponsored investments in tourist facilities is necessary to safeguard the quality of the natural environment and the opportunity to establish a flourishing new economic activity, both of which would be threatened by sporadic, unplanned growth.

Outline Development Plan for the Tanjong Penggerang Coast

An examination of the beaches along the South China Sea south of Sedili Besar points to the conclusion that the most favourable area for tourist development is the 16 mile stretch between Tanjong Siang and Tanjong Punggai. Compared with the coast to the north and south of it, this stretch has the following advantages:

(i) it is backed not by swamps, but by land suitable for urban development, golf courses, and other amenities;

(ii) the sand and the sea are clearer;

(iii) there is an ample water supply in the nearby head waters of the S. Lebam;

(iv) any highway system for the development of the Penggerang peninsula will run close to this stretch of coast;

(v) there is a greater variety of topography and views; and

(vi) important conservation considerations do not inhibit development.

These central beaches have room for some 90,000 people at comfortable densities. There is enough suitable adjoining land for accommodation and services for up to 50,000 overnight visitors, at least three 18-hole golf courses, and the urban development for the required service population.

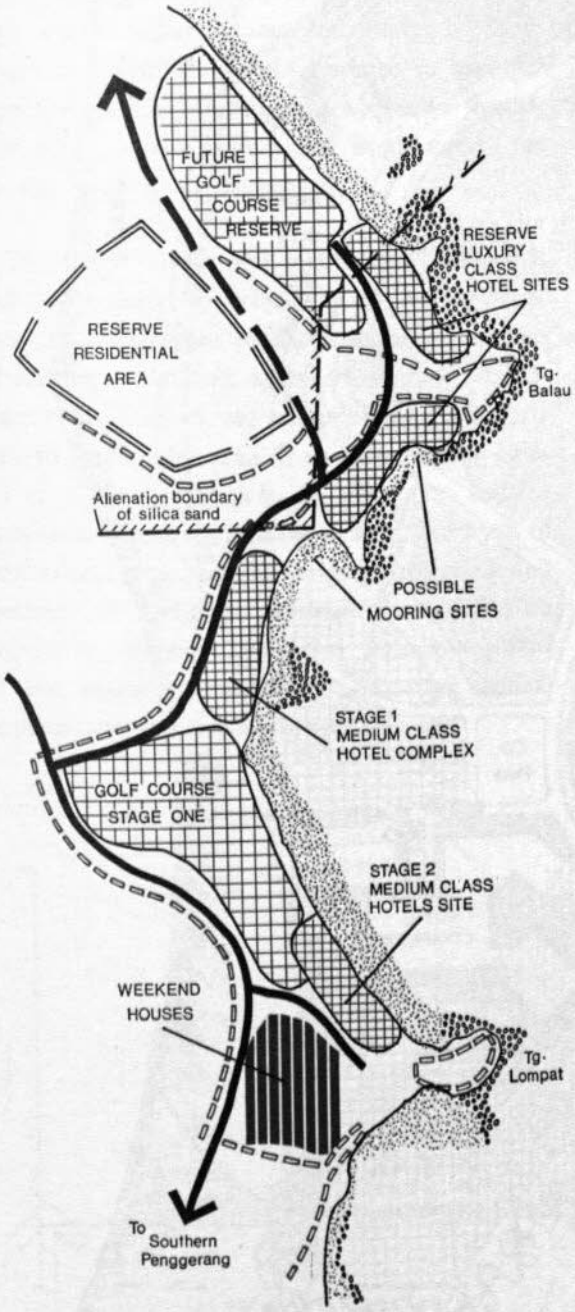
Three possible rates of employment growth compatible with the estimated growth of demand are:

Year	High	Medium	Low	Cumulative Medium Total
0-5	600	600	600	600
6-10	2,800	2,000	1,200	2,600
11-20	10,400	7,400	4,200	10,000
21-30	14,000	9,800	5,600	19,800
	27,800	19,800	11,600	

The Tanjong Penggerang resort might eventually support a total population in the order of 100,000. Development on even this scale is unlikely to exceed the potential demand for holidays in Johor, or detract from the potential growth of the other projects in the State and elsewhere in West Malaysia.

The coastal strip would be reached by the distributor roads from the proposed Penggerang Highway, serving a new village and agricultural areas, and the resort would be served by a spine road running a quarter to one mile inland and 150-200 feet above sea level. It should be a scenic highway with fine views. The plan allows for the

INITIAL TOURIST DEVELOPMENT



new village to develop gradually into the main urban service centre for the region, including the resort. There would eventually be additional residential areas near the coast.

Hotels and other tourist accommodation and facilities would be clustered around the prominent headlands, with the intervening land behind the beaches mainly devoted to golf courses, parks, picnic areas, agricultural development and other open uses.

A lake on the S. Lebam would provide water supplies for the resort and opportunities for sport fishing. Two nearby forest reserves would provide further rural amenities.

INITIAL TOURIST PROJECT

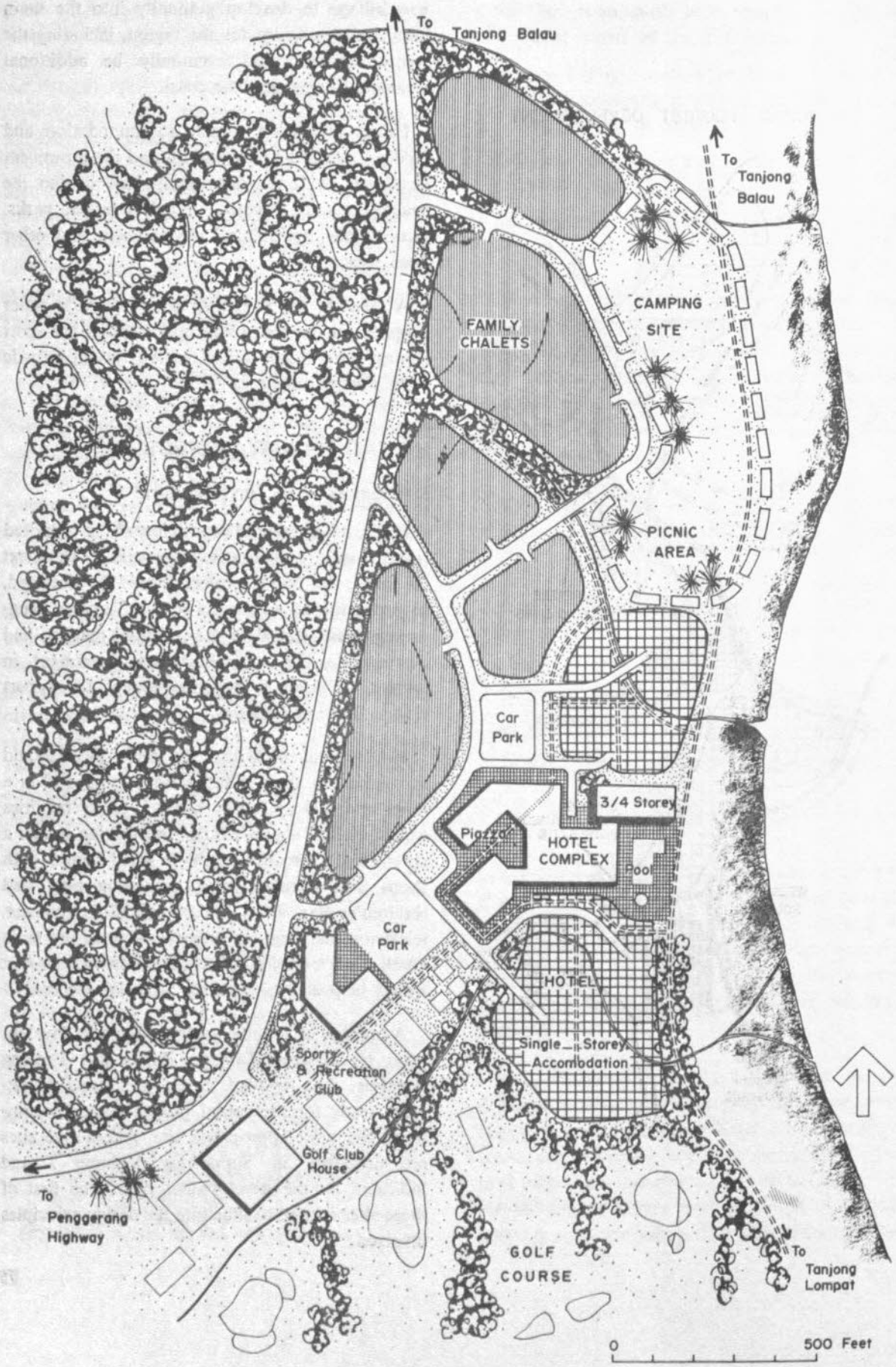
Size and Form of Development

Proper planning and promotion of the proposed resort would ensure steady growth in the next 30 years. An initial project should be designed, to prove the attractiveness of the Tanjong Penggerang coast, stimulate the potential market, and demonstrate the profitability of investment in tourism. It needs to be large enough to support a wide range of facilities.

It is recommended that the first project should accommodate about a thousand visitors, 600 in a hotel and 400 in family chalets. Other facilities would include a golf course and driving range, a sports and recreation club, a small centre with shops and restaurants, a swimming pool and children's play areas. There would be cinema, television, dancing and entertainment in the main hotel. The inclusion of a casino in this project would help ensure its early financial success.

A number of suitable areas for the first development lie between Tanjong Balau and Tanjong Penawar. The detailed development and investment study for the initial project should recommend the most appropriate site. Alternative sites are described in Supporting Volume 7 and indicated on the development plan. The first of these sites is used to illustrate the design principles involved.

SKETCH PLAN — INITIAL TOURIST PROJECT

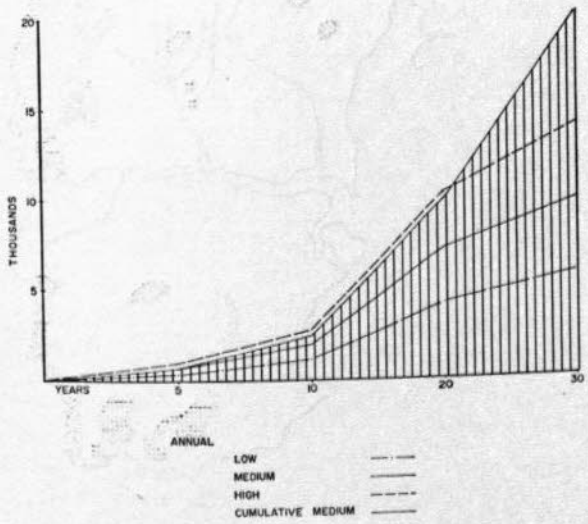


Implementation

The initial tourist development scheme should be a joint project between Government and private investors. Government involvement will help to attract early private investment and ensure a high level of Malay participation and a high quality of environmental design. Private investors would contribute expertise in management and training, and contacts with travel agents, tour operators and airlines that would ensure the economic success of the project.

To attract private and international finance it will be necessary to prepare a detailed development and investment plan. An experienced team of architects, planners, engineers, cost and investment consultants should be appointed at an early date to prepare this plan. It would provide a basis for negotiations with potential developers and for architectural and engineering design. Estimates of professional time, outline terms of reference and methods of technical assistance are given in Supporting Volume 7, together with descriptions of the manpower, training, and other critical implementation considerations.

RATE OF EMPLOYMENT CREATION IN TOURISM



Cost and Benefits

Despite the monsoon, the coast can be expected to attract visitors throughout the year, with peaks at weekends, school holidays and festivals. It has been assumed that hotel beds would have an average occupancy of 70 percent and chalet beds of 50 percent.

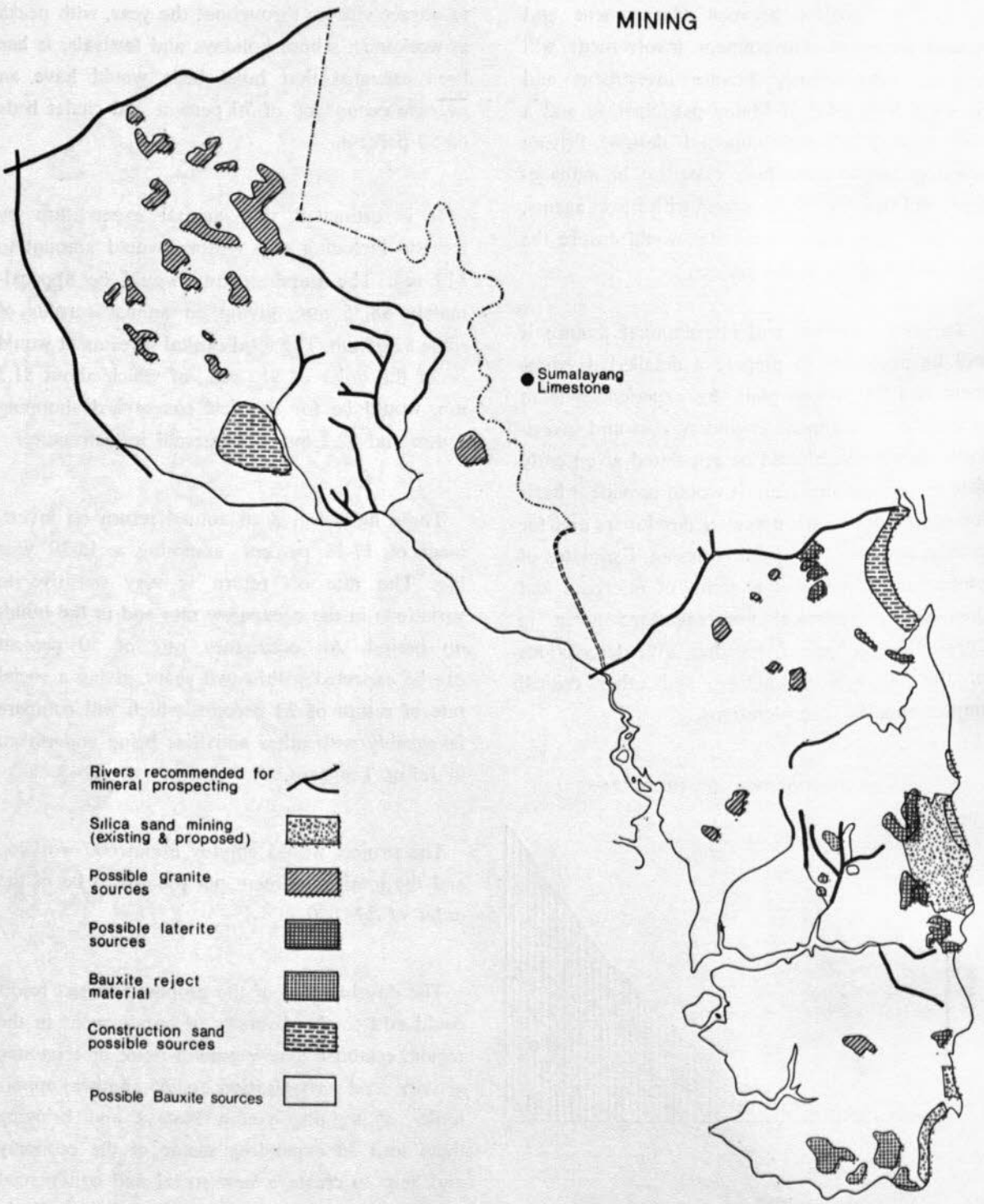
It is estimated that annual expenditure by tourists including day visitors, would amount to $10 mn. The running costs would be approximately $8.35 mn., giving an annual surplus of some $2.65 mn. The total capital investment would be of the order of $15 mn., of which about $1.3 mn. would be for the golf course and shopping centre and $2.2 mn. for external infrastructure.

These figures give an annual return on investment of 17-18 percent, assuming a 15-20 year life. The rate of return is very sensitive to variations in the occupancy rate and in the build-up period. An occupancy rate of 50 percent can be expected within two years, giving a social rate of return of 28 percent, which will compare favourably with other activities being undertaken in Johor Tenggara.

The project would employ about 600 workers, and the total investment per job would be of the order of $24,000.

The development of the proposed tourist resort could add to the diversity of employment in the region, establish a new growth point of economic activity and urbanisation, offer another opportunity of training young Malays and bringing them into an expanding sector of the economy and help to create a new social and commercial centre in southern Tanjong Penggerang. Early planning of this project is therefore of critical importance.

MINING


Sumalayang Limestone
Rivers recommended for mineral prospecting
Silica sand mining (existing & proposed)
Possible granite sources
Possible laterite sources
Bauxite reject material
Construction sand possible sources
Possible Bauxite sources

chapter six
MINING

MINERALISATION

Metallic Mineralisation

The large granite mass associated with the metasediments and the alluvial deposits indicates the possibility of mineral occurrences in these areas. In such an environment a wide range of minerals could be expected but current evidence is that only tin occurs in any economic quantities.

Iron: iron and tin have both been mined at Pelepah Kanan and other nearby mines but these deposits are almost worked out and are mined for the tin only.

Prospecting records identify iron ore deposits in the south of Tanjong Penggerang but they are not of a high commercial grade nor do they occur in significant quantities. No further deposits have been identified in the areas.

Tin: the Mining and Metallic Minerals maps, in the Atlas, indicate the extent of existing mining and prospecting. The tin mines in the Johor Tengah area have been operating for many years and are still productive. Significant tin occurrences from the Geological Survey or prospectors' reports are plotted on the maps and help to show the widespread nature of mineralisation. Available geological evidence would tend to indicate that further tin deposits could be expected in both regions but only detailed prospecting will reveal the extent and grade.

Bauxite: active bauxite mining areas are located in the south of Tanjong Penggerang, the deposits occurring as capping on the low lying hills in the area of volcanics. These deposits have been extensively worked and adjoining unmined areas have been thoroughly prospected. Mining is expected to continue on the present scale for several years. Two other areas within a similar environment have been indicated on the mining map; these do not appear to have been prospected and could merit investigation.

Non-Metallic Minerals

Silica sand: areas of high grade silica sand are being worked particularly in the south eastern coastal strip of Tanjong Penggerang. Another area further north has been alienated for future working. In all these areas the quality of sand is good but the occurrences are sporadic and largely confined to small areas in specific environments. No new economic deposits have been identified.

Construction materials: there are extensive areas of granite in both regions. The Mining Map shows the known outcrops or locations where the overburden is sufficiently shallow for economic working to be feasible.

Laterite areas are indicated together with those areas where reject grade bauxite material is available and could provide an additional source of secondary road surfacing material. Sources of construction sand are also shown.

The Sumalayang limestone, although outside the Project Area, is of particular interest. Investigations indicate a possible reserve of 30 million tons of limestone. This deposit could supply all agricultural requirements for lime in the Project Area and elsewhere in the State. It also might prove effective for stabilising soils in road construction, and could be of value to the construction industry as a source of ornamental or dimensional stone and cement. As a result of the initial study Perbadanan Nasional Berhad (PERNAS) are investigating the economic viability of exploiting the deposit for cement manufacture.

MINING—FUTURE PROSPECTING

A study of the geological and prospecting records of both areas shows that the possibility of further deposits of economic value over the majority of the Project Area cannot be entirely ruled out. To prove the whole area, extensive and detailed prospecting would be required but a study, based on known mineralisation or current mining areas, shows that certain areas can be identified as having a higher probability of success. Those rivers whose tributaries should be subjected to further prospecting for tin have been located. Water development priorities are in Chapter 2.

Two areas of possible bauxite deposits have been shown in Tanjong Penggerang; however these areas are on alienated and developed agricultural land.

Without detailed prospecting it is difficult to make a reliable assessment of the extent of any deposits. Table 6.1 has been included to show the

significance of existing mining in, or adjacent to, the Project Area. Possible locations of construction materials, silica sand and kaolin clay are shown on the map.

TABLE 6.1

MINERAL PRODUCTION 1965-1969

	1965	*1966*	*1967*	*1968*	*1969*
Tin (Piculs)	25,026	37,958	85,965	39,400	20,011
Iron (tons)	12,278	35,569	56,038	103,269	nil
Bauxite (tons) ..	843,172	976,016	885,389	786,042	1,056,068

Detailed prospecting and testing of these materials would be necessary before exploitation. The area alienated for future silica sand working will also require careful prospecting; present available evidence is that no large, commercially viable, deposits exist in the area. Evidence from the project surveys indicates that only the old beach sands along the coast have any potential and that behind these fringe sands the bulk of the area currently alienated is peat swamp.

PROSPECTING AND MINING CLEARANCE

Under the present system of land capability classification, land possessing a high potential for mineral development is designated Class I land and it is necessary to obtain a clearance certificate from the Geological Survey before other forms of development can take place. On geological evidence this would tend to exclude a large part of both project regions from immediate development.

This possibility was indicated in the Draft Project Report and as a result a Review Group was set up to study the prospecting proposals.

The proposals, indicating areas where mineral prospecting had a high degree of probability and other areas, which, based on geological assumptions, could be mineral bearing but probability was marginal, were conveyed to the Review Group. The proposals included the recommendation that agricultural development should not be delayed because of the need for prospecting and mining clearance. At a meeting of the Review Group the Geological Survey agreed that those areas indicated by the Consultants as marginal for prospecting were unlikely to yield economic deposits and could be released for agricultural development. The rivers where the potential was considered higher were to be opened for immediate prospecting. The Master Plan has been prepared on this basis.

chapter seven
COMMUNITIES AND TRANSPORT

PLANNING CRITERIA

The proposals are designed:

(i) to assist the realisation of the potential for agriculture, forest exploitation and tourism;

(ii) to promote the phased development of the project areas and to accommodate changes in behavioural and travel patterns as incomes increase and employment becomes diversified;

(iii) to provide high standards of access to work, urban centres, and export and marketing outlets;

(iv) to stimulate the growth of urban activities and facilities;

(v) to provide for a major early role in implementation by FLDA;

(vi) to lead to full employment in each region;

(vii) to give access to new social and economic opportunities for the existing population of the Project Area;

(viii) to provide a physical social environment attractive to new residents, tourists and visitors.

The proposals have sufficient flexibility to permit varying rates of development in commerce, industry, tourism and agriculture, particularly livestock and other new crops, and they allow for a variety of private and public development and production agencies.

The hierarchy of places planned to serve the Project Area comprises the regional centre (Johor Baharu), a sub-regional centre (Kluang), one existing (Kota Tinggi) and two new major service centres, six large central villages, 32-45 large villages, and the existing villages and kampongs.

By 1990, there are likely to be some 400-500,000 people living in and around the project regions; approximately 180,000 in Kluang, 21,000 in Kota Tinggi, 13,000 in the new town in Johor Tengah, 44,000 in the new town in Tanjong Penggerang, 27,000 in the 6 new central villages and about 120,000 in the new villages together with 60,000 in existing villages and kampongs.

These projections are based upon the twin objectives of an early major implementation role for FLDA settlement schemes and the attainment of low future levels of unemployment. It should be emphasised that, to avoid future large scale unemployment and underemployment in the project regions, no "partial employment" settlement schemes should be developed additional to those proposed in the Second Malaysia Plan and indicated for later plan periods. The achievement of a future high rate of employment within the project regions will probably be heavily dependent also upon industrial development in Kota Tinggi, and Kluang and the new towns, and upon the success of the tourist development programme.

TOWNS AND VILLAGES

New Villages

The proposed basic settlement unit is a village of 300-700 families; the precise number will depend on the size of the agricultural area served, the labour requirements of the crops, and the income and employment policies of the production agencies around the village.

Villages of the proposed size and type will give all families easy access to work and basic amenities, particularly roads, water supply, schools and health facilities, and will foster the growth of shops and other commercial services. The natural increase of the population of a 500 family village is likely to be from about 2,500 at the time of settlement to 4,000 fifteen years later.

Preliminary sites of 200-300 acres have been identified. Each village has been located close to the proposed regional road system and is within reasonable travelling time of several agricultural or other employment opportunities.

In Tanjong Penggerang FLDA are already developing six new villages and a main central village, of the same size and density as those proposed in this report, and in Johor Tengah four village sites are indicated in the area already being developed by GSA schemes and private estates near Layang Layang.

The principles for the design of the proposed villages and central villages are as illustrated:

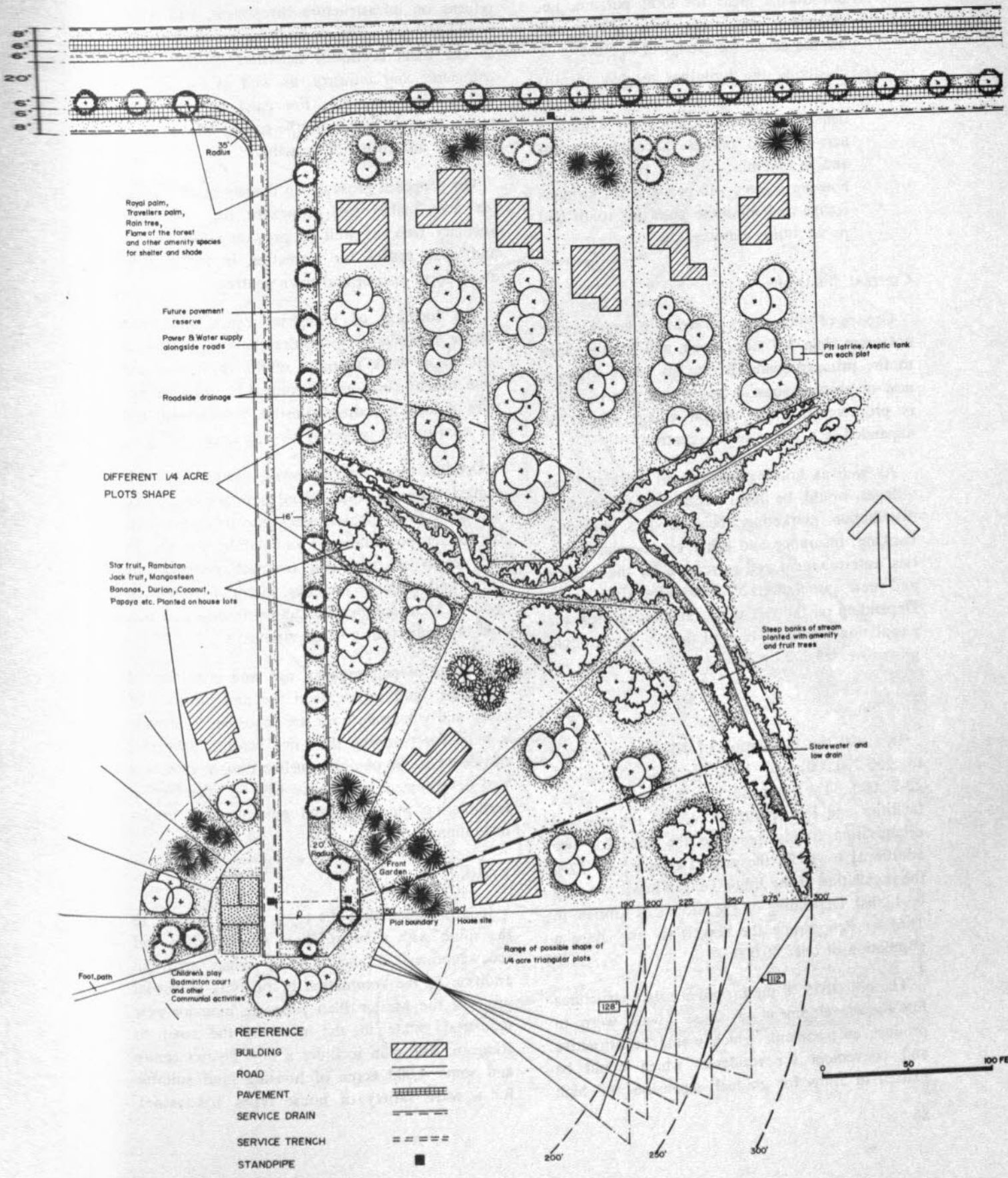
(i) the aims of these plans are to show methods of minimising development costs;

(ii) giving safe and convenient access throughout;

(iii) producing an individual character to each village particularly in the design of the centre;

(iv) blending the village attractively into its landscape by the use of planting and open space;

HOUSING LAYOUT EXAMPLE



(v) introducing areas for local pursuits, i.e., children's play areas, local shops, badminton courts for groups of houses;

(vi) clustering the buildings to give identity to each housing area. The residential density proposed is based on a quarter acre plot, to provide adequate gardens and to minimise sewerage costs. Compact housing layouts will promote social intercourse and minimise costs for roads and public utility services.

Central Villages

Groups of villages are served by a larger centre not more than 5-8 miles away, and located close to the primary roads. In the six areas where a new or existing town is not within this radius it is proposed that the central village should be expanded to a minor service centre.

As well as housing agricultural workers these villages would be local centres for processing, distribution, marketing, social services, shopping, banking, insurance and other commercial activities, entertainment and recreation for the existing and new population of the surrounding areas. Depending on the size of the catchment area, the population served by each of these villages would grow to 15-35,000 by 1990.

Towns

By 1990 the population of Kluang may grow to 150-200,000 and that of Kota Tinggi to 20-30,000. The demand for access to urban facilities and job opportunities, and the national urbanisation trends, point to the need for two additional towns in the project regions. By 1990 the population of the Johor Tengah new town may be 13,000. Depending on the success of tourism in Tanjong Penggerang the new town may have a population of over 40,000.

The objectives of the proposed urban structures for the development of these towns were to produce environments which would be attractive and convenient for residents, which could be phased to allow for gradual expansion and high returns on infrastructure investment, and which would allocate sufficient land for the development of the main economic activities of the towns, commerce and industry, as well as for housing and ancillary services. For each town the proposals were derived from the testing of alternative methods and forms of growth.

The proposed gross urban density of 15 persons per acre makes full allowance for roads and ancillary uses, as well as providing for schools, and open spaces for recreation in the housing areas, local district and town centres.

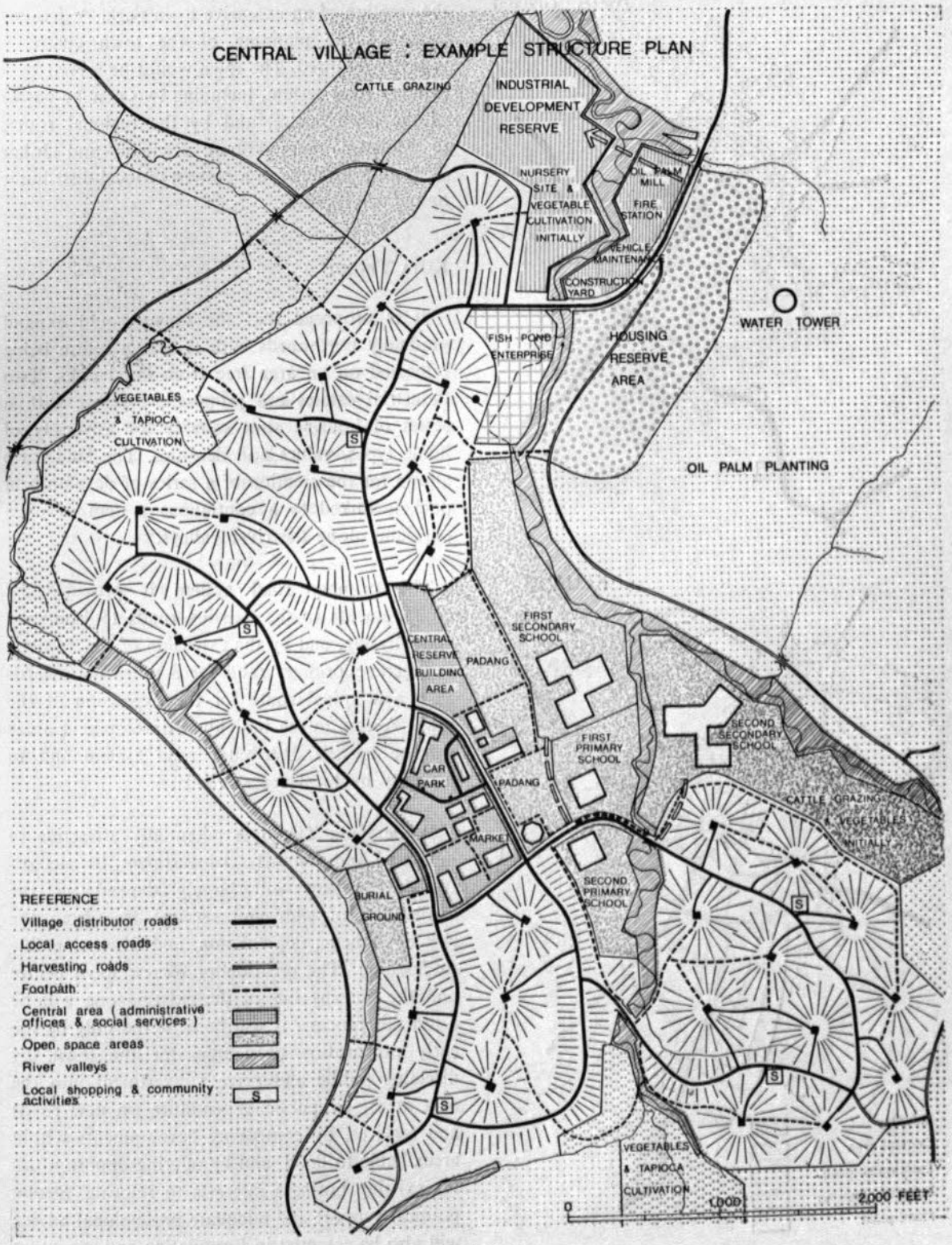
The location of industrial zones and town centres is designed to secure the most balanced patterns of work journeys within the towns and from nearby rural areas, compatible with economies of scale in industrial estate development and the need for flat or gently sloping sites.

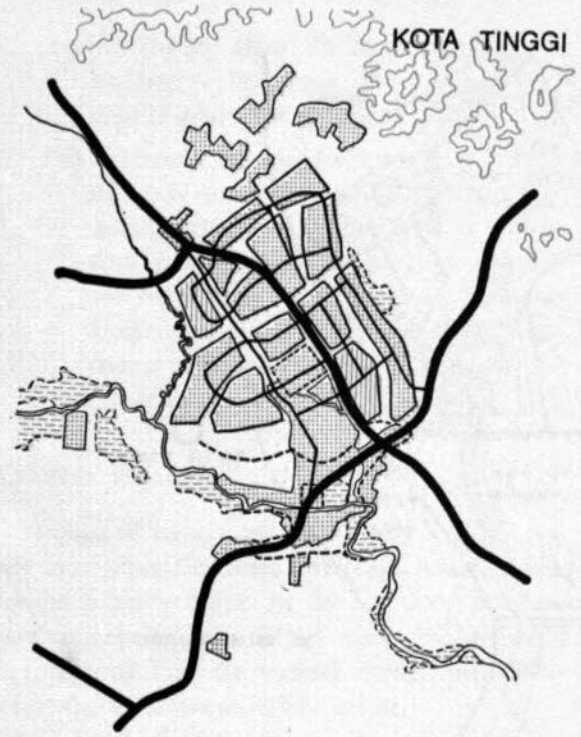
Detailed plans for the towns, particularly their centres, industrial estates and new housing areas, will need to be phased according to assessments of market potential and population growth. In the design of road and footpath systems, car parks and terminal facilities, attention should be paid to increased private car ownership and use, and to public transport requirements.

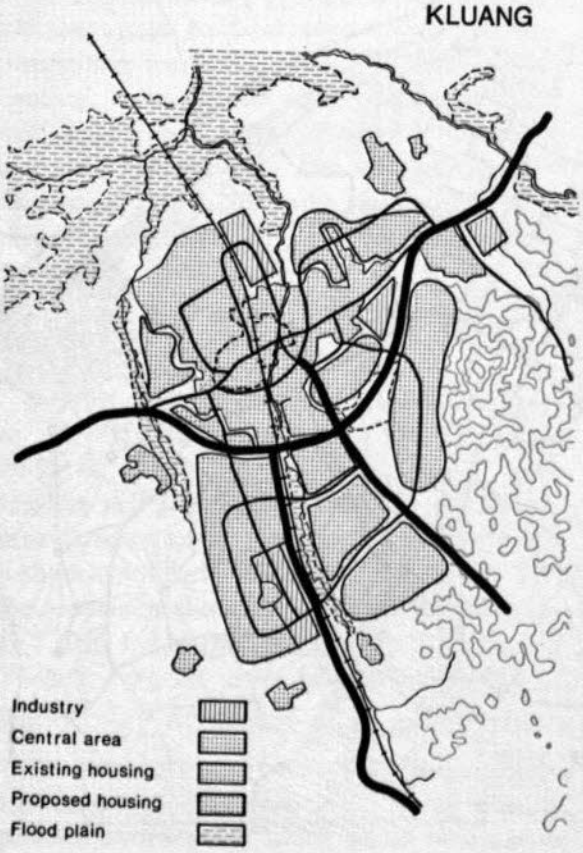
Surveys of employment, age and condition of buildings, land values, land use and turnover of retail and wholesale trade are required, to provide a basis for planning the town centres. Specialist advice on traffic planning, urban design, valuation and development economics will be necessary in formulating the plans and guiding their implementation.

Kluang

It is proposed that the town should expand to the south with some infilling, rehabilitation and redevelopment in the existing urban area. In addition to the completion of ongoing industrial projects, the Master Plan proposes a major new industrial estate to the west of the road to Rengam. The plan includes a new district centre and some 4,000 acres of housing land suitable for a wide variety of house types and values.


CENTRAL VILLAGE : EXAMPLE STRUCTURE PLAN
CATTLE GRAZING
INDUSTRIAL DEVELOPMENT RESERVE
NURSERY SITE & VEGETABLE CULTIVATION INITIALLY
OIL PALM MILL
FIRE STATION
VEHICLE MAINTENANCE
CONSTRUCTION YARD
WATER TOWER
FISH POND ENTERPRISE
HOUSING RESERVE AREA
VEGETABLES & TAPIOCA CULTIVATION
OIL PALM PLANTING
FIRST SECONDARY SCHOOL
CENTRAL RESERVE BUILDING AREA
PADANG
FIRST PRIMARY SCHOOL
SECOND SECONDARY SCHOOL
CAR PARK
PADANG
MARKET
CATTLE GRAZING & VEGETABLES INITIALLY
BURIAL GROUND
SECOND PRIMARY SCHOOL
VEGETABLES & TAPIOCA CULTIVATION
REFERENCE
Village distributor roads
Local access roads
Harvesting roads
Footpath
Central area (administrative offices & social services)
Open space areas
River valleys
Local shopping & community activities
S
0
1000
2000 FEET





The river provides an excellent opportunity for the creation of an extensive town park. A detailed study of the planning of the town centre is urgently required. The town would be served by a primary road system, including two new by-passes of the town centre, and by the regional routes to Mersing, Ayer Hitam, Rengam and Johor Tengah, together with a pattern of local distributor and access roads.

Kota Tinggi

It is proposed that the town should expand gradually northwards with the town centre being relocated on an area free from flood risks. Two industrial estates are proposed, together with a series of housing sites suitable for a variety of home types, values and densities. The land form allows for the creation of a series of development pockets linked to a continuous system of open parkland along the river valleys.

The primary road system is provided by improvements to the existing roads to Lombong and Mersing, and by the extension of the Tanjong Penggerang primary road for 3 miles northwards as a new spinal route for the expansion of the town. Access to the individual development areas will be by the distributor road system and to property by local access roads.

While Kota Tinggi is potentially attractive to industrial and commercial investment, its successful development will largely depend on the availability of sites and services free from the risk of damage, depreciation, and disruption due to flooding. The creation of a new town centre and the phasing out of the existing one will be a difficult process. It will be achieved only by the early preparation of a plan for the town, by directing public and private investment into the new areas, by public expenditure on new roads and services, by controlling developments within areas liable to flood, and by offering opportunities for existing business interests to relocate. Strong political support and adequate professional advice will also be essential in formulating and executing proposals.

Surveys of property owners have shown both their marked willingness to co-operate in such a venture, and the need for early clear policy decisions on compensation and relocation.

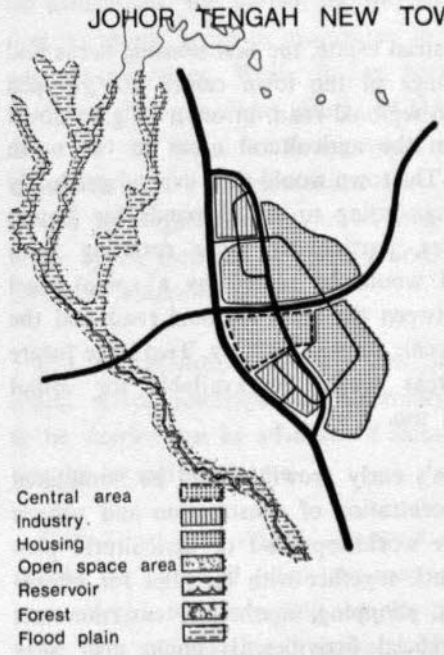
The New Town in Johor Tengah

The site proposed for this new town is some 3-4 miles north of the S. Sayong, immediately to the east of the S. Pengeli and stretching alongside the regional road for some three miles. Two industrial estates are proposed, one at each end of the town. The central area lies between these two estates, with the housing areas to the east. The northern section of the town would be available for early agricultural development and released for urbanisation according to later proven demands. The town would be served by a main spinal distributor road parallel to the regional road, the proposed regional east-west secondary road and a network of local distributor roads. Its early development would be based on industrial plants for construction, vehicle repair and maintenance, and for processing timber and agricultural products. The town will provide central facilities for education, health, shopping, marketing, entertainment, and other social facilities, and housing for those employed in those uses and the adjacent agricultural areas. By 1975 over 4,000 people could be living in the new town supported by 1,700 jobs. Construction would start near the proposed centre, with part of the proposed southern industrial estate being developed. Thereafter expansion would take place gradually according to the demand for services and industrial employment. By 1990 over 60,000 people are likely to live within its service area, with a demand for up to 6,000 general industrial jobs in the town. The population by that time could be of the order of 13,000.

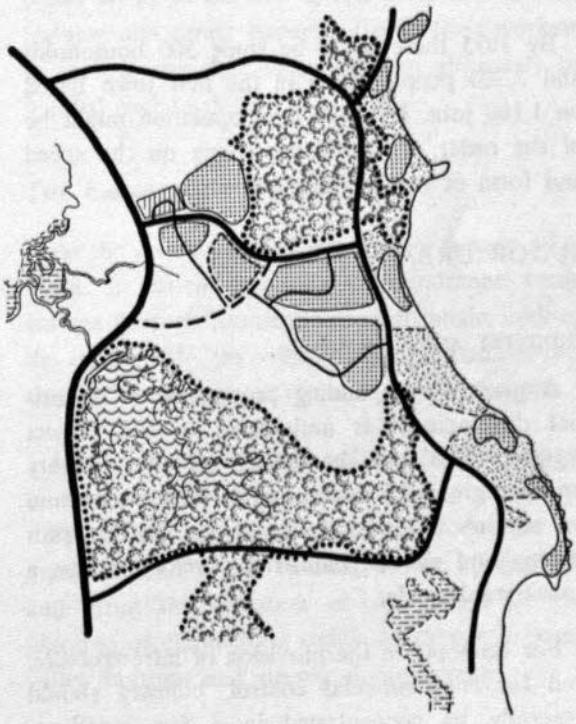
The New Town in Tanjong Penggerang

The site proposed for the new major service centre in southern Tanjong Penggerang lies immediately to the east of the proposed regional road, to the north of the S. Chemangor, and

JOHOR TENGAH NEW TOWN



TANJONG PENGGERANG NEW TOWN



stretches some 3 miles eastwards in a band 1-2 miles wide to within half a mile of the coast south of Tanjong Lompat.

An industrial estate, the first housing areas and the first stage of the town centre are grouped close to the regional road, in order to give direct access from the agricultural areas to the north and south. The town would then expand gradually eastwards according to the demands for homes and services, particularly those resulting from tourism. It would be served by a spinal road running between the main regional road and the proposed scenic coastal highway. Two large future housing areas would be available for initial agricultural use.

The town's early growth would be stimulated by the concentration of construction and vehicle maintenance workshops and of agricultural processing plants, together with facilities for education, health, shopping, marketing, entertainment and other social activities. It could also offer homes to people employed in the adjacent agricultural areas.

By 1975 there could be some 500 households and 3,300 people living in the new town based on 1,100 jobs. By 1990 the population might be of the order of 44,000 depending on the speed and form of tourist developments.

MAJOR URBAN LAND USES

Industry and Commerce

A gradually expanding programme of industrial development is anticipated in the project regions. This will be based on the primary processing of agricultural and forest products and on service industry, followed by further processing and general industrial development on a considerable scale.

For economy in the provision of infrastructure, and for environmental control, industry should generally be concentrated in a few locations. These should be conveniently accessible from the surrounding areas, and situated close to the main regional road network. Therefore, a number of industrial estates of 200-400 acres are proposed in Kluang, Kota Tinggi and the two new towns, together with smaller estates in the six central villages.

A series of 40-50 tons per hour palm oil mills is proposed, strategically located close to the regional road system and near to the central village in each oil palm area.

The two new towns and Semberong Tengah village offer central sites for the milling of tapioca, maize, and sorghum, and the possible canning and freezing of fruits and vegetables. The nearby agricultural areas are suitable for a large variety of crops, and the need for processing will depend upon the success of crop diversification efforts.

FLDA is considering erecting a major central factory near Kota Tinggi for state-wide rubber operations. Suitable sites for other producers occur in the four towns. The building of a timber industries complex, with a comprehensive range of processes, should start in Johor Tengah new town in 1972.

As the population increases, the market for local industrial products and services, for example furniture, building and vehicle repairs, will build up. Suitable sites for storage yards, workshops and shop-houses, with the necessary power, water supply, and sewerage arrangements, should be made available according to demand.

No proposals are made for early large scale general industrial development in the project regions, other than allowing for the continued expansion of Kluang. By 1980-85, owing to the expanding labour force from the families settled between 1970 and 1980, general industrial development may well be socially desirable. Kluang, Kota Tinggi and the two proposed new towns are conveniently situated in relation to national and regional communication systems, adequate power and water supplies, and the work forces of the surrounding areas. These locations are likely to become increasingly attractive to potential developers, and the provision of infrastructure should be planned by 1980. When full they would

employ some 8,000 people, or 20 percent of new manufacturing employment in South Johor, in the decade 1980-1990.

The demand for retail goods and services in the proposed towns and villages will result in the development of shops, banks and markets. The early development of a group of shops and a market square is proposed in each centre, together with individual shops in housing areas, and reserve areas for the development of further premises.

For both industry and commerce, while some of the buildings will be provided by private investors, others could be developed by public agencies such as MARA and SEDC, so as to secure a high level of Malay involvement. These would be controlled initially by experienced personnel capable of training for full management and ownership roles those of potential entrepreneurial ability attracted to the project regions.

Housing

The Malay tradition of rural housing set in attractive gardens is exceptional in the tropical world. The environmental quality of the proposed towns and villages will be largely dependent on integrating these traditions with industrialised production methods.

Over the next 20 years, developments in and around the project regions will require the construction of about 50,000 houses. It is suggested that to meet the demands of different family sizes, incomes, and tastes, and to overcome the constraints imposed by rapid land settlement, a variety of house types and methods of construction should be used. Settlers should be able to select from a variety of house types and to choose between entirely building their own homes, building them from pre-cut timber and/or prefabricated panels, or having them built by construction teams.

The Development Authority should coordinate the financing and development of housing in the Project Area. It should act as a channel for investment funds, which could be obtained from both private and public sources, and which could be distributed, for public and private construction, as grants, loans or mortgages, to individuals and co-operatives. While it has been assumed that, for the immediate future, FLDA will continue to use standard house types erected by contractors, it is recommended that his agency should investigate methods of offering alternative house types, methods of construction, prices and forms of finance to settlers.

Site preparation, surveying, the provision of roads, water, sewerage and electricity will need to be carried out in advance of house construction by specialised teams.

Skilled or semi-skilled construction workers should be attracted from the west coast areas and offered residence and employment in the same way as agricultural workers. The construction labour force should be employed by enterprises set up in the new towns. They should offer training and career opportunities to their workers in such a way that ownership can ultimately be handed over to them.

The Landscape

As the development of the project regions takes place, a varied and pleasant landscape could emerge from the transformation of jungle, making the countryside, the villages and the roads attractive for the enjoyment of residents and visitors.

In the countryside this will be possible where a mixture will result from the planting of different tree crops, from the introduction of grassland and arable farming where appropriate and from the retention of the jungle or the planting of commercial stands of timber in some valley bottoms and steeply sloping areas.

Along the roadsides and in the gardens, and other open spaces in the towns and villages, trees should be planted for shade and amenity.

The expansion of agricultural tree nurseries, to include a variety of fruit and amenity trees in each area for use in public works and for purchase by residents, is critical to the realisation of these proposals.

In both regions mining has resulted in large pockets of land devastation. While this is part of a larger national problem, measures leading towards the reclamation of such areas are proposed, including land regrading, commercial tree planting and the use of the reject material for road building. The need for careful control of any future mining operations to ensure the minimum effect on both agricultural potential and environment quality is stressed.

COMMUNICATIONS

General

The Master Plan proposes a hierarchy of roads within the project regions, linked to the surrounding national network, to provide an efficient and economical pattern of communications.

Despite the proximity of the railway and the wealth of inland water in the project regions, future movements of goods into and out of the area will be predominantly by road, since the short distances to the main ports and supply centres and Singapore and Johor Baharu would make double handling uneconomic.

Traffic forecasts for 1970-1990 were used to indicate design standards for the proposed network and for the improvements required to existing roads. Some minor adjustments to Public Works Department (JKR) standards are suggested in order to reduce construction costs.

The Project Area is served by the following sections of the Federal and State road network, which either have spare capacity at present or are programmed for improvements.

(i) the main north-south route from Kuala Lumpur to Johor Baharu, (Federal Route 1), with connections from Kulai to Kota Tinggi, and from Ayer Hitam and Simpang Rengam to Kluang, Jemaluang and Mersing.

(ii) the east coast route from Johor Baharu through Kota Tinggi and Jemaluang to Mersing.

Within the Project Area the only existing roads are the first eight miles of the FLDA Ayer Tawar road from Kota Tinggi into Tanjong Penggerang; the isolated road along the south coast of Tanjong Penggerang; a dispersed pattern of mining and logging tracks; and the harvesting roads on existing estates.

The main railway line from Singapore to Kuala Lumpur forms the western boundary of Johor Tengah, with stations at Kulai, Layang Layang, Rengam and Kluang.

The only ocean going vessels serving the Project Area directly are those carrying bauxite from southern Tanjong Penggerang, while significant movements of goods and people on inland water occur only on the S. Johor south of Kota Tinggi and in the Johor Strait.

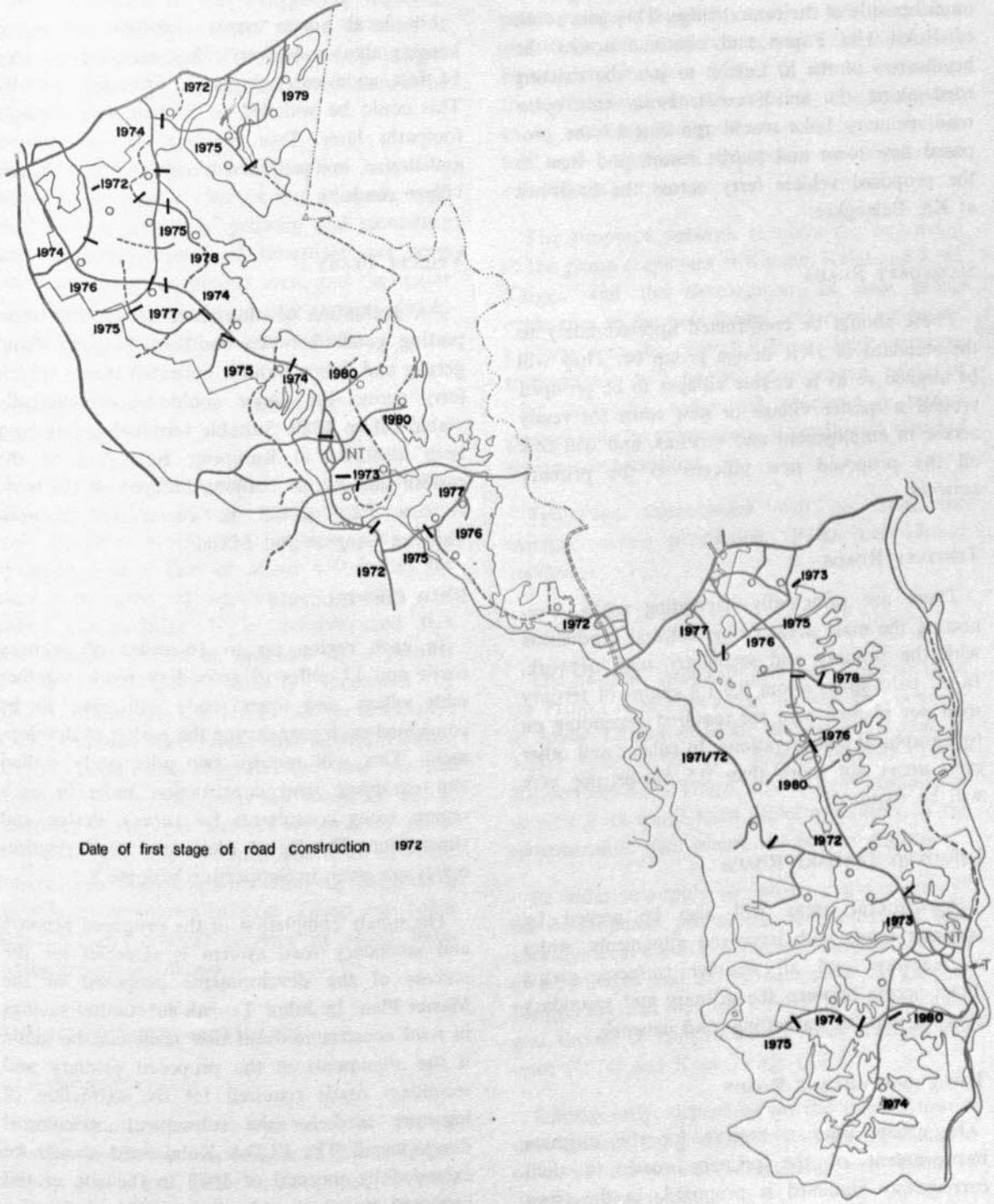
International and national air services serving Southern Johor operate through Singapore. There is a military air-field at Kluang and a new airport is proposed near Johor Baharu. These will provide an adequate level of potential service for the needs of Johor Tenggara.

Primary Roads

These should be constructed approximately to the standard of JKR design group 05. They follow the most direct practicable routes between the primary processing plants and the export outlets, and link the proposed new towns and master villages with the national network.

In Johor Tengah a main spine road is proposed as a continuation of the FLDA Kulai road through the heart of the development areas to join the proposed inner by-pass of Kluang. A second primary road will run from the Simpang

ROAD PHASING



Date of first stage of road construction 1972

Rengam—Rengam road north-eastwards across the region to join the Kluang—Mersing road near Kg. Gajah.

In Tanjong Penggerang two primary roads will run south from the Kota Tinggi-Mersing road on either side of the central ridge. They join south of Bukit Ulu Papan and continue across the headwaters of the S. Lebam to join the existing road along the south coast. From this spine road, primary links would run east to the proposed new town and tourist resort, and west to the proposed vehicle ferry across the S. Johor at Kg. Belangkor.

Secondary Roads

These should be constructed approximately to the standard of JKR design group 04. They will be aligned so as to enable villages to be grouped around a master village or new town for ready access to employment and services, and will link all the proposed new villages to the primary network.

Tertiary Roads

These are principally harvesting roads, connecting the main areas of agricultural production with the primary and secondary road network. In oil palm areas about 0.8-1.3 chains of tertiary road per planted acre are required depending on topographical considerations. In rubber and other crop areas not more than 0.5 chains per acre will be required.

Improved Tertiary Roads

Agricultural areas will also be served by collector roads with improved alignments, wider carriageways and all weather surfaces, giving direct access between the primary and secondary network and the harvesting road network.

Town and Village Roads

In urban areas a reserve for the ultimate improvement of the primary roads to dual carriageway standard is proposed. In the town centres and industrial areas the local distributors should be to secondary road standard, and in the villages and urban housing areas local distributors with wide footpaths and 20 foot carriageways are proposed.

For local access roads and culs de sac in housing areas a 40 feet wide road reserve with a 14 feet wide carriageway is proposed initially. This could be widened to 16 feet with surfaced footpaths later. Tree planting, service trenches and drains, are proposed alongside the town and village roads.

Vehicle Ferry

An evaluation of alternative modes for transporting goods between southern Tanjong Penggerang and Johor Baharu indicated that a vehicle ferry across the Johor could be economically viable before 1980. Suitable terminal points have been identified at Kampong Belangkor on the eastern side and at Tanjong Langsat on the west. A new road would be constructed between Tanjong Langsat and Masai.

Road Construction

In each region up to 16 miles of primary roads and 12 miles of secondary roads together with village and town roads will have to be completed each year during the period of development. This will require two adequately staffed and equipped road construction units in each region, using consultants for survey, design and supervision. Details of plant and staff requirements are given in Supporting Volume 8.

The timely completion of the proposed primary and secondary road system is essential for the success of the developments proposed in the Master Plan. In Johor Tengah substantial savings in road construction and user costs can be made if the alignments of the proposed primary and secondary roads required for the extraction of logs are used for the subsequent agricultural development. The FLDA Kulai road should be extended by the end of 1973 to the site of the proposed new town where the timber industries

complex will be located. This will require a bridge of approximately 150 ft. in length over the S. Sayong by mid 1973.

In Tanjong Penggerang the immediate priority is the completion of the Penggerang highway, starting with the improvement of the 15 miles of partly constructed road. The three small bridges over the tributaries of the S. Lebam should be completed by mid 1973.

The use of lime for soil stablisation is recommended to produce a cheaper but adequate road base for most lengths of primary and secondary roads. A large deposit of limestone has been located adjoining the project area, and the major soil series underlying the project regions should be suitable for this type of construction.

Commercial and Public Transport Organisation

It is estimated that a fleet of about 800 lorries will be required for internal transport of agricultural produce when the regions are fully developed, and a fleet of about 450 lorries for external transport of agricultural produce and general commodities. It is recommended that these services should be provided by a number of contractors, some initially sponsored by MARA. Maintenance bases should be established in the proposed new towns and central villages. MARA could also operate the bus services required for the two proposed levels of public transport; (i) express services on primary roads from Kluang through Tengah new town to Johor Baharu, and from southern Tanjong Penggerang through the new town to Kota Tinggi and Johor Baharu; and (ii) local services by small buses linking groups of villages.

PUBLIC UTILITY SERVICES

Telecommunications

Telecommunication services are at present provided by group exchanges at Kota Tinggi, Kluang, Kulai and Johor Baharu and by some small rural exchanges in and around the Project Area. These exchanges are linked into the national microwave system. The present network provides a good basis from which to develop further services within the Project Area.

Public call boxes, lines to schools, fire and police stations, post offices, other public services and to the offices of commercial enterprises will be required in each village. In towns, including the tourist developments, sufficient lines will need to be available for government agencies, industrial and commercial enterprises and residential subscribers.

The proposed network involves the expansion of the group exchanges at Kluang, Kulai and Kota Tinggi, and the development of new group exchanges in the new towns, and rural automatic exchanges in the central villages. Inter-exchange transmission will be by underground cable or v.h.f. and u.h.f. radio with overhead or underground lines to subscribers, according to detailed design considerations.

Television transmission will be from the existing station at Gunong Pulai, near Johor Baharu—

Power

The national electricity grid link from north of the Project Area runs along the western boundary of Johor Tengah to Johor Baharu power station. Apart from a 22 KV supply between Johor Baharu and Kota Tinggi, electricity is obtained at present from small local diesel generators in the settlements in and around the project regions.

In order to supply the power requirements of the development programme it is proposed that, initially, local diesel generators should be installed in all villages and in the new town in Tanjong Penggerang, and that 66KV links from the national grid should be constructed to Johor Tengah new town (1974) and Kota Tinggi (1978).

Subsequently, depending on the rate of tourist development, the grid network should be extended to serve the tourist resort and new town in Tanjong Penggerang.

Sewerage

Proposed villages will use the standard pit latrine for house lots, and septic tanks for grouped higher density uses, e.g., the village centres and schools.

Proposed towns would use a similar system in their early stages of development, with the higher density housing, commercial, industrial and social land uses initially requiring septic tank package plants or cess-pool systems. Town planning must allow for the subsequent provision of collection systems and sewerage treatment works. In this way, for the minimum cost, pollution of water supplies can be avoided and acceptable sanitary standards attained.

Water Supply

Supplies from the project regions to the various development schemes and to external areas have been described in Chapter 2. As well as chlorination of the proposed supplies it is suggested that the fluoridation be carried out at all treatment works in view of dental health problems. Within villages and towns it is proposed initially to use the FLDA system of a reticulation scheme with one standpipe to every six families. Depending on detailed design and topography it may prove possible in certain situations to reduce the number of standpipes and still give the same quality access. People desiring and able to afford individual connections should pay for them.

SOCIAL SERVICES

Education

The schools in and adjacent to the Project Area are generally crowded and inaccessible from the main areas of potential development. Primary schools exist in all the developed areas but secondary education is available only in Kluang, Kulai, Johor Baharu, Sungei Rengit, Kota Tinggi and Rengam, and only in the first three is sixth form education included.

A standard six classroom primary school on a 7-12 acre site is proposed for each village, with sites reserved for extra classrooms or schools in the larger villages. The school should be completed when the first families move into the village. A series of twelve classroom primary schools, each of 12 acres, are proposed in the two new towns and in Kluang and Kota Tinggi, where they will supplement existing facilities.

Two sessions per day are assumed for all schools. Four types of large secondary schools are proposed; (i) large comprehensive schools of 20-30 classrooms on 15-20 acres sites with academic and technical streams in the upper school and sixth forms. These will be located in the two new towns and in Kluang and Kota Tinggi, where they will supplement existing facilities, and where the early provision of more extensive hostel accommodation is urgently required; (ii) similar large comprehensive schools for middle and upper schooling but without sixth forms in the villages of Semberong Tengah, Bukit Besar, Ayer Tawar II, Simpang Wa Ha, Sungei Sening, and Sungei Rengit; (iii) large lower secondary schools of 9-21 classrooms on sites of 10-20 acres in Kahang Timor, Ulu Pengeli, Ayer Tawar V, Sedili Besar, Bukit Aping I and Sungei Mas; (iv) comprehensive vocational schools for craft training of 16 and 17 year olds in Kluang (1974) and Kota Tinggi (1980).

The attainment of an increasingly improved standard of secondary education in rural areas in general and the project regions in particular, and the full use of the facilities proposed, is highly dependent upon the provision of good communications. The provision of subsidised school bus services for secondary education is recommended.

Health, Welfare, Employment and Rural Development Services

The Project Area is served at present by general hospitals at Johor Baharu and Kluang and by a district hospital at Kota Tinggi. These are

supported by health centres, clinics and dispensaries, and by midwifery, family planning, dental and malarial control services.

In Johor Tenggara the existing social and welfare services such as children in need, public assistance, emergency relief, adult education and vocational training, generally fall short of national objectives and/or existing national ratios of facilities to population.

Both existing criteria and the flexibility to accommodate new policies were taken into account in recommending the services summarised below.

Clinics are proposed in each village, together with sub-health centres in the central villages, and with main health centres in Kluang, Kota Tinggi and the new towns. Extended hospital facilities in Kluang and Kota Tinggi will also be required followed by rural hospitals in the new towns. These facilities will meet the recommendations in relation to malaria control, family planning, malnutrition and dental health.

In Kota Tinggi, Kluang and the two new towns additional district welfare offices will be required together with sub-employment offices, according to the job opportunities being developed.

Community halls are proposed in each village and in the towns. These will provide facilities for libraries and various types of adult education as well as a local centre for meetings and social activities. In addition the use of schools for social activities, further education and recreation should be encouraged.

Other Public Services

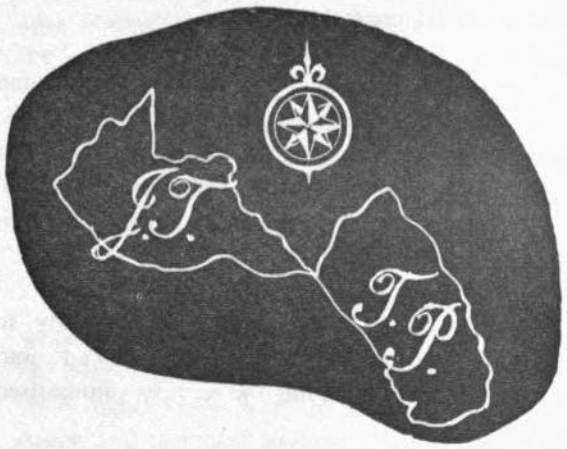
There are district administration and local government offices, post offices, fire and police stations in Kota Tinggi, Kluang and Johor Baharu at present. Although these provide a framework for serving the project regions they will not be capable of providing the level of services necessary in the future.

It is suggested that any modifications of district administrative boundaries and responsibilities relative to the Project Area should take place at the time of a re-organisation of local government within the State. However, district administrative functions for southern Tanjong Penggerang and central Johor Tengah will probably require the provision of offices in the two new towns in the 1990's. As local administrations are established offices will be required in the villages and new towns, five to ten years after the date of settlement.

District post offices are proposed in the two new towns, together with post offices in the central villages, reserve sites for a post office in each village, and a number of mobile units to serve each region as it develops. A main post office is planned for Kluang, and the district post office in Kota Tinggi may later need to become a main post office.

Fire stations are proposed in the central villages, the new towns, Kluang and Kota Tinggi.

Police stations are proposed in the central villages, together with police posts in all villages. In time district headquarters may expand from the proposed police stations in the new towns.



chapter eight

THE DEVELOPMENT AUTHORITY

This chapter sets out recommendations for the establishment of an organisation to take overall responsibility for the implementation of the Master Plan.

The functions of this organisation are to initiate, expedite and coordinate action; to monitor and evaluate progress and continue comprehensive forward planning of implementation, identifying present and prospective bottle-necks and designing measures to remove or avoid them; to formulate policy for future development; to ensure execution by outside agencies and to execute by outside contract or directly where other agencies cannot meet requirements on time or where no agency exists to perform the required tasks.

The planned rate of development of this large project is very rapid. To achieve it requires a

strong and active organisation, alert to the problems of scale and of coordinating interlocking activities and agencies to a timetable which leaves little room for shortfall.

The organisation must be sufficiently powerful, technically competent and informed (but not necessarily very large) to be an effective co-ordinator, able to reconcile priorities and to resolve differences between operating agencies, including the more powerful ones, in the interests of balanced development of the whole area. It must have powers and resources to implement directly when necessary. In the main development period the organisation will be responsible directly or indirectly for annual development expenditures in the Project Area of the order of $50 million per annum.

The organisation will require senior staff of outstanding calibre and strong support at the highest levels of both Federal and State Governments. This support will be an essential condition for rapid and effective implementation, especially in the first years.

The Draft Project Report of January 1971 proposed the establishment of a public development corporation with a mixed Federal-State policy board. It rocommended that the Chief Executive be appointed as soon as possible to take part in the preparation of the Master Plan, to begin work on the establishment of the corporation and to initiate the most urgent development tasks.

These proposals were discussed within the Federal and State Governments, with particular attention to the control and authority of the corporation, the role of SEDC and land alienation. The Steering Committee then invited the Consultants to put forward "ideas on possible types of administrative set-up which they think would be appropriate, for consideration by the Federal and State Governments. When all possible alternatives have been laid out within the Master Plan, the two Governments could then decide on an alternative agreeable to both".

The recommendations in this chapter have been prepared in the light of discussions in the Steering Committee and elsewhere. They also take account of the promulgation, in February, of Emergency (Essential Powers) Ordinance No. 87, 1971. Following these discussions it is assumed that the organisation should be a State corporation or authority established under State law, and that arrangements for land alienation are required which ensure that the final approval for alienation will remain vested in the State Government and which meet the need to reflect vital interests of the Federal Government in specific alienation policy.

SUMMARY OF ALTERNATIVES CONSIDERED

Table 8.1 summarises the main alternatives which have been considered in an attempt to find a form of organisation capable of taking overall responsibility for implementation of the Johor Tenggara Master Plan and meeting the objections to the proposals in the Draft Project Report.

All organisations considered here are development corporations or authorities established in the form of development corporations. The alternatives are listed under the following headings:

Control of corporation and Board participation;

Alternative corporations;

Powers of Board and Chairman;

Appointment of Chief Executive;

Land alienation.

The Remarks column summarises arguments and recommendations set out in Supporting Volume 9.

Table 8.1

Alternatives	Remarks
1. *Control of corporation and Board participation*	
a. Federal	Not acceptable to State.
b. Mixed Federal-State co-Chairman: Mentri Besar and Federal Minister	Proposed in Draft Report January 1971: rejected by State.
c. State control and State members only	1. Not strong enough for overall responsibility and coordination. 2. Not appropriate for projects with large Federal interests and resources, partly from international loans.
d. State control, under Ordinance No. 87, 1971 or an Act with similar effects Chairman—M.B.; State Board with Federal participation. P.M. gives directions, approves budgets, issues Federal finance.	*Recommended* in this report as workable, if there is strong support and interest from the Federal as well as the State Government.
2. *Alternative corporations*	
a. SEDC as now constituted.	Proposed by State in February 1971. Objections as 1c and 2b. It has a vital role as investor/contractor, but cannot do the overall job.
b. SEDC reconstituted under Ordinance No. 87, 1971 or similar Act, with Federal participation as 1d above.	1. Conflict of interest: SEDC has particular commercial interests in Project Area, cannot also act as impartial coordinating body with overall responsibility. This is the crucial objection. 2. Federal participants would be concerned with SEDC projects throughout the State, not only with those using Federal resources. But it would avoid multiplication of separate semi-independent corporations (*see* 2c below).
c. Separate corporation/authority established by State law in the form of State corporation under Ordinance No. 87 or similar Act (as 1d).	1. *Recommended* in this report as in 1d. 2. Separate organisation with overall responsibility for implementation. Leaves SEDC as at present constituted, able to undertake commercial investments and to supply services on contract. 3. Future multiplication of separate corporations for different Federal State projects and duplication of services can be avoided by setting up one Board with scope for all. But Chief Executive and staff for Johor Tenggara concentrate solely on this project for as long as necessary.

3. *Powers of Board and Chairman* advisory policy executive	Policy Board *recommended*. Chairman not to be executive. Chief Executive has administrative control over staff (as in Johor SEDC).
4. *Appointment of Chief Executive*	
a. By Prime Minister	Proposed in Draft Project Report. But not consistent with State-controlled organisation.
b. By State	No assurance to Federal Government on use of resources in very large-scale project.
c. By State with Federal concurrence.	*Recommended. See* comments on 1d.
5. *Land alienation*	
a. Declaration of area as development area under Article 92 of Federal Constitution	
b. Alienation to mixed Federal-State corporation	Proposed in Draft Project Report: rejected by State and Review Group V.
Final authority for land alienation remains vested in State Government;	
c. Vest land in Project Area authority which recommends final alienation—an arrangement on the same lines as for FLDA.	Not appropriate in this form.
d. Chief Executive of the Authority makes recommendations to State Executive Council (ExCo) on all applications with respect to land in Project Area.	*Recommended*
If recommendations are not satisfactory, the Board is given the opportunity to consider and advise ExCo before it makes final decision. Final authority remains with ExCo. Decisions listed for information of Board.	

RECOMMENDED ORGANISATION AND CONTROL

It is recommended that a Development Authority in the form of a State development corporation be established by State law.

The Chairman of the Board is the Mentri Besar or appointed by the Mentri Besar.

The Board is a Policy Board which approves or amends proposals, plans and budgets submitted by the Chief Executive.

The Chief Executive is responsible for all administrative and executive functions, including administrative control over staff. He is supported by a senior staff group.

The Chief Executive and the members of the senior staff group are appointed by the State Government with the concurrence of the Federal Government.

Ordinance No. 87 of 1971 applies to all State development corporations established by State law after 31 December 1970. It will apply to this corporation. This Ordinance gives State corporations access to Federal resources and other powers which are desirable in an organisation charged with co-ordination of both Federal and State agencies; the Prime Minister or his designate may give directions and will approve budgets; at least 3 Federal members are on the Board.

Composition of the Board:

Chairman	Mentri Besar or appointed by the Mentri Besar
State members	State Secretary
	State Financial Officer
	2 members of ExCo or appointed by Ruler in Council
Federal members	Prime Minister's Department
	Treasury
	Ministry of National and Rural Development
	One other ministry: perhaps Ministry of Commerce and Industry
Development authority	Chief Executive
Other members	2-6 other members with relevant experience but not representatives of operating agencies in the Project Area, appointed by agreement between State and Federal Governments under Section 3 (1) of Ordinance No. 87, with or without voting powers

The recommended Board excludes all operating agencies with particular interests in the Project Area.

The main purposes of this recommendation are to avoid future multiplication of similar semi-independent organisations for separate projects and duplication of services, and to ensure that Johor Tenggara is developed in the context of the State as a whole.

The proposed composition and powers of the Policy Board are described in detail in Supporting Volume 9.

This Authority is established initially to take overall responsibility for the implementation of the Johor Tenggara Master Plan but it is recommended that the law establishing it be drafted to allow the same Authority gradually to be made responsible for other projects or areas in the State in which substantial Federal resources are combined with State resources. A possible example is the industrial area associated with the Port.

It must be emphasised, however, that the implementation of the Master Plan will impose very heavy demands on the Chief Executive, especially during the first five years: safeguards are needed to avoid overburdening him. During this period, if the Policy Board is concerned with another project, that project must have its own fully capable director. The Chief Executive appointed initially to supervise implementation of the Master Plan for Johor Tenggara should

accept specific responsibility for the new project only at his discretion; if he does not accept, the director of the new project becomes a temporary member of the Policy Board. Further, if the Chief Executive thinks it essential during the early years he should withdraw from membership of the Policy Board when it deals with the new project. Similarly, provision by the Johor Tenggara staff of technical, information and other services to other projects or to the Policy Board in connection with them, must be at the discretion of the Chief Executive, only when the Johor Tenggara organisation has become effective, and with such additional resources as he may require.

The recommendation in the previous paragraphs shares one of the aims of the proposal that the overall organisation for the Project should be a division or subsidiary of SEDC, since this would give unified control of various projects. However the use of SEDC, as at present or reconstituted under Ordinance No. 87 of 1971, cannot be recommended, for several reasons (SV 9). The crucial reason is that the organisation with overall responsibility for co-ordinating the various operating agencies in the Project Area should not itself have substantial commercial interests in particular projects in the area. SEDC is establishing itself as the commercial instrument of the State Government, undertaking financially profitable investments. It will have commercial interests in the Project Area both as a long term investor and, when its capability has been built up, as a contractor to the Authority, competing with other contractors. Unacceptable conflict of interest would arise if the same organisation and staff, or a subsidiary responsible to the same organisation, were to be responsible for award of contracts, advice on allocation of land to various types of agency, and for resolution of differences between agencies. The Authority must be, and be seen to be, a separate agency of Government. It may be noted that the Johor SEDC Enactment of 1968 itself includes a normal safeguarding provision: that any members of the SEDC Board who have an interest in any contract of SEDC must declare their interest and normally must not discuss or vote.

The rest of this chapter is concerned with the work of the Authority only in relation to the Johor Tenggara Master Plan and Project Area, except when otherwise noted.

LAND ALIENATION

The final approval for alienation will remain vested in the State Government.

It is necessary to ensure that decisions with respect to land in the Project Area are made with due urgency and also that they are informed decisions, taken in the light of professional advice on the probable consequences for implementation in the short term, and on the implications for achievement of development objectives in the longer term. The latter point must be emphasised. The preparation of a comprehensive long term plan for the development of a region and the proposed creation of a professionally strong organisation to continue forward planning for that region are both new in the State of Johor. Some adjustments of procedures are inevitably required for both the plan and the organisation to be used as fully as possible towards the achievement of the development aims of the State and Federal Governments. It is important that those who decide on alienation should always be informed of the advise and recommendations of the Chief Executive of the Authority and, if required, of the Board.

The recommended procedure on advice and recommendations is outlined below.

(*a*) Before any decisions are made on alienation or other proposals relating to land, forest and other natural resources in the Project Area, the applications or proposals will be examined by the Chief Executive who will make recommendations to the Executive Council or to a body or person to whom requisite powers have been delegated.

(*b*) The primary purpose of the Chief Executive's examination of applications or proposals will be to ensure that they are consistent with approved policies and plans, or if not, that they justify plan revision, and that they will not adversely affect implementation of other projects or of the programme as a whole.

In preparing his recommendations he will consult as appropriate with the specialist officers in the State, especially with those whose approval is required by law.

(*c*) The Chief Executive's examination and recommendations will take account of the vital interests of the Federal Government.

(*d*) If, on first consideration, the Executive Council is not satisfied with these recommendations, it should postpone its decision in order to give the Board of the Authority the opportunity to examine the matter and to advise the Executive Council, before it makes its final decision. This provision does not alter or affect the final authority of the Executive Council.

(*e*) The Executive Council will inform the Board of the Authority of all alienations and other decisions with respect to land in the Area as soon as they have been made.

Points (*a*), (*d*) and (*e*) should be incorporated in the law establishing the Authority.

The importance of speeding the processes of dealing with land applications has been stressed.

It is recommended that a State Land Office should be established to deal with land administration for the Project Area, located within the Authority, with a Collector and Land Revenue officers posted by the Commissioner for Lands and Mines but financed from the budget of the Authority. The Collector should have the normal delegated powers. Expansion or redistribution of capacity for land administration would be required in any event to deal with the additional work arising from development, especially in Kota Tinggi district. Location of the Land Office for the Area within the Authority will ensure direct communication between the Chief Executive, the CLM and the Executive Council, avoid much unnecessary written communication and delay and permit adjustment of capacity to needs.

It is inappropriate to make further specific recommendations at this stage. The State Government of Johor is aware of the need to speed processes of land administration and has made considerable improvements in recent years. If the Chief Executive of the Authority finds in practice that delays in dealing with applications or other aspects of land administration are hindering development implementation, he will draw the Board's attention to this and propose solutions.

STAFF OF THE AUTHORITY

Senior Staff Group: responsibilities

The proposed staff organisation is shown in the chart. The senior staff group is composed of the Chief Executive, his deputy and initially, two heads of divisions of similar calibre and standing.

The Chief Executive is the leader of this group. He is responsible to the Policy Board and through the Board to the Federal and State Governments for overall implementation of the Master Plan. He is given complete discretion to implement all policies approved by the Board. He has administrative control over all staff, with power to hire and fire, and control over finance. He is a full member of the Policy Board with voting rights. In his absence his deputy takes his place on the Board and as leader of the senior staff group.

The senior staff group as a whole is responsible for implementation in the widest sense. Both this group and the supporting staff with degree level qualifications, who are concerned with planning and with liaison with implementing agencies, are small enough for the deployment of individuals to be varied without formality according to current needs, especially in the early years. The following description of the proposed organisation explains the primary responsibilities of individual members of the senior staff group; but these responsibilities are not rigidly separated.

The Deputy Chief Executive has specific responsibility for:

(*a*) planning and policy, collection and analysis of information required for monitoring progress, identifying problems and designing solutions; evaluation of alternative projects; preparation of advice on applications or proposals in respect of land alienation.

(*b*) budget preparation and control, finance and contracts.

(*c*) administration, personnel and training.

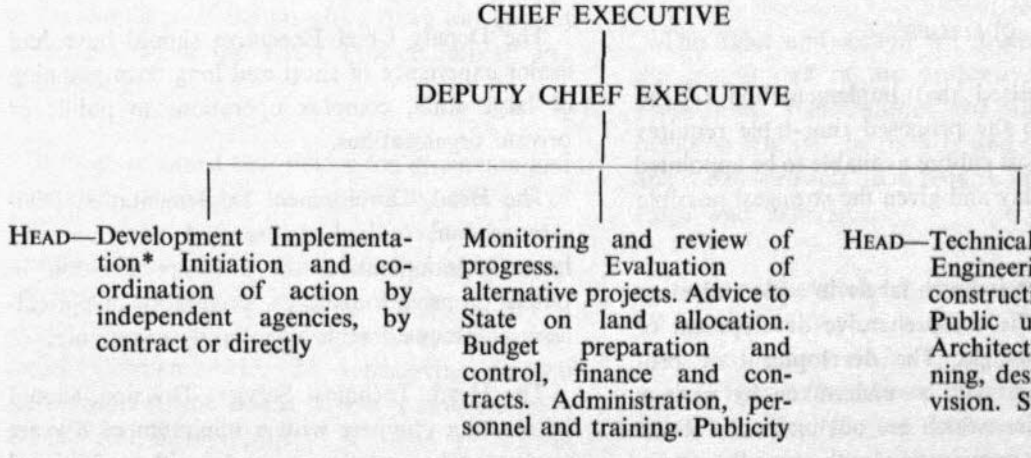
(*d*) publicity.

It is proposed that (*b*) and (*c*) above should each be under an experienced controller, to allow the Deputy Chief Executive to concentrate on his planning functions.

The Head, Development Implementation Division, is primarily responsible for initiating, expediting and co-ordinating action by other agencies or, where necessary, by the Authority itself, directly or by contract; for negotiations; for direct action to co-ordinate, to resolve problems between agencies, and to remove obstacles to implementation. He and the staff working with him will spend more time in direct personal contact with the implementing agencies than those concerned with planning and policy formulation.

The Development Implementation Division should begin as a single division, under one head. Towards the end of 1972 it should be split into two parts: the first concerned with agriculture, forestry and timber industry, the second concerned with housing, urban development, social services, transport, tourism, commence and industry.

DEVELOPMENT AUTHORITY POLICY BOARD, SENIOR STAFF GROUP AND ITS FUNCTIONS



* Towards the end of 1972 the Development Implementation Division should be divided as follows:

HEAD—Development Implementation

- Agriculture
- Forestry
- Timber industry

HEAD—Development Implementation

- Village and town development
- Housing
- Social services
- Transport
- Tourism
- Commerce and industry

The Head, Technical Services Division, is responsible for engineering and public utility services, architectural and planning design and supervision, and surveying. His first large responsibility will be to plan, organise and supervise the 1971-75 construction programme and to ensure that the road programme, in particular, is carried out on time, either by private contractors or by construction units of JKR working under his supervision. This construction programme is the main example of development to be financed directly by the Authority and to be carried out under its supervision.

The titles of Chief Executive and Head of Division have been used in preference to Director General and Director in order to distinguish both ranks and salaries from those of existing authorities or Government departments. Those appointed to these posts should not necessarily be civil servants and it will probably be necessary for salary scales to exceed those of Government, in order to draw the necessary capability from the widest field.

Senior Staff: qualities

It is emphasised that implementation of the Master Plan to the proposed time-table requires men of the highest calibre available to be appointed without any delay and given the strongest possible support.

The operation is much larger in scale and more complex than the comprehensive development of the Jengka Triangle. The development of productive activities will be undertaken by various different agencies, which are not under the direct control of the organisation with overall responsibility for implementation. This reduces the requirements for staff for direct implementation, but it does not in any way reduce the responsibilities of the top echelon: in practice it makes it more difficult to carry out.

The immediate task of the Chief Executive and his senior staff is to get the developments which are complementary to the FLDA programme moving on schedule. This must be done initially with little specific formal authority and without an established organisation. It can only be done by a Chief Executive with great energy who has the complete confidence of the Prime Minister and other senior Federal Ministers as well as that of the State Government, and who can call on their support to ensure that action is taken.

The necessary characteristics of the first Chief Executive are therefore high energy, strong support in the highest quarters and ability to use professional specialist support. He should also have had experience of and a successful record in large scale operations comparable to those of holders of the top commercial posts in the country. However it may not be possible to find immediately a man with such experience: it may be necessary to consider making an initial appointment of someone who has the first three characteristics and who will command the confidence of the more permanent senior staff.

The other three members of the senior staff must have the same three characteristics: energy, support and ability to use specialist staff.

The Deputy Chief Executive should have had senior experience of short and long term planning of large scale, complex operations in public or private organisations.

The Head, Development Implementation Division, should have had practical experience of large scale operations in a senior position in public or private agencies, preferably in agriculture, with considerable negotiating experience.

The Head, Technical Services Division, should be a senior engineer with a minimum of 8 years professional experience and with additional training and experience in planning; at present holding a senior position in a private or public organisation.

Chief Executive: immediate appointment

It is firmly recommended that an immediate appointment be made jointly by the Federal and State Governments of a man with the characteristics required in the first Chief Executive. He

should be appointed for special duties in connection with the Johor Tenggara project. He should be given authority and Federal finance to appoint professional and assistant staff, and to begin work on the urgent tasks as indicated in Chapter 9.

It is quite clear that, whatever amendments may be made to the Master Plan once presented, to achieve the agricultural programme for the SMP period, implementation must begin in October 1971. It is also clear that the logging and road construction programmes must go ahead, if agricultural development is not to be delayed. Work must begin on the organisation of these and other developments, pending the establishment of the organisation to take overall responsibility for Master Plan implementation.

Discussion of the alternatives set out in the Master Plan Report and in Supporting Volume 9 may take some time. Once a decision is made, the preparation and passage of the legislation required to establish the organisation will take more time. During this period, those developments should go ahead on which there was general agreement when the Draft Project Report was presented.

It must be noted that delays for discussion and legislation would not be avoided by the use of SEDC as the organisation with overall responsibility. Apart from the critical objection to SEDC on grounds of conflict of interest, SEDC would have to be legally reconstituted to come under Ordinance No. 87, introducing Federal participants to the Board. If the recommendation on Federal membership of a State corporation contained in this report is accepted, the provisions on membership in Ordinance No. 87 also require amendment.

Professional and Managerial Staff

Table 8.2 summarises the minimum requirements for staff with degree or equivalent qualifications to undertake the increasing volume of work. This table is confined to effective staff engaged in fulltime work: it excludes additional staff members appointed partly or wholly for training.

The staff of the Implementation Planning Division under the Deputy Chief Executive is combined with the staff of the Development Implementation Division under its head of division, because their work will be closely combined especially in the first years.

It may be necessary initially to recruit outside Malaysia one senior economist and an agricultural planner with experience of overall planning.

Engineers and the architect-planner, or an experienced planner to work with a recently qualified architect, may also have to be recruited initially outside Malaysia.

The required qualifications and experience and the provisions to be made for training are described in Supporting Volume 9.

This table and section are concerned only with the central staff of the Authority. They exclude professional staff required for the cattle multiplication scheme, the forestry and timber complex and other projects that require specialist knowledge and experience.

It was recommended in the Draft Project Report of January 1971 that the Chief Executive of the proposed corporation be appointed without delay to take part in the Master Planning phase. In the event, no senior officer of State or Federal Governments has been closely associated with this work, knowing that he would be directly involved in implementation. In contrast, the Jengka Triangle study was conducted throughout in close association with the senior officers of FLDA. The demands of the development programmes of the SMP will absorb more than the presently available number of senior people with relevant qualifications and experience of comprehensive development planning. Therefore, in order to ensure the quality of support and advice that

TABLE 8.2

SUMMARY OF MINIMUM STAFF REQUIREMENTS

	1971	*1972*	*1973*	*1974*	*1975*
Chief Executive	1	1	1	1	1
Assistant to Chief Executive and Secretary to Board	1	1	1	1	1
Senior staff:					
Deputy Chief Executive	1	1	1	1	1
Head(s): Development implementation	1	1	2	2	2
Head: Technical services	1	1	1	1	1
Assistant to Deputy Chief Executive	—	1	1	1	1
Publicity/information officer	—	1	1	1	1
Planning and policy and Development implementation:					
General economics	—	2	3	3	4
Agricultural planning	—	1	1	1	1
Agricultural economics	—	—	—	1	1
Regional planning	—	—	—	1	1
General qualifications	—	3	4	4	4
		6	8	10	11
Technical Services:					
Senior engineers	1	1	2	2	2
Engineers	—	3	4	6	6
Architect planner	—	1	1	1	1
Licensed surveyor	1	1	1	1	1
Administration, personnel, finance:					
Controllers	2	2	2	2	2
Administrative and contracts	—	2	3	3	3
Accountants	—	2	2	2	2
Training Officer	—	—	1	1	1
Total staff, graduate or equivalent	9	25	32	36	37

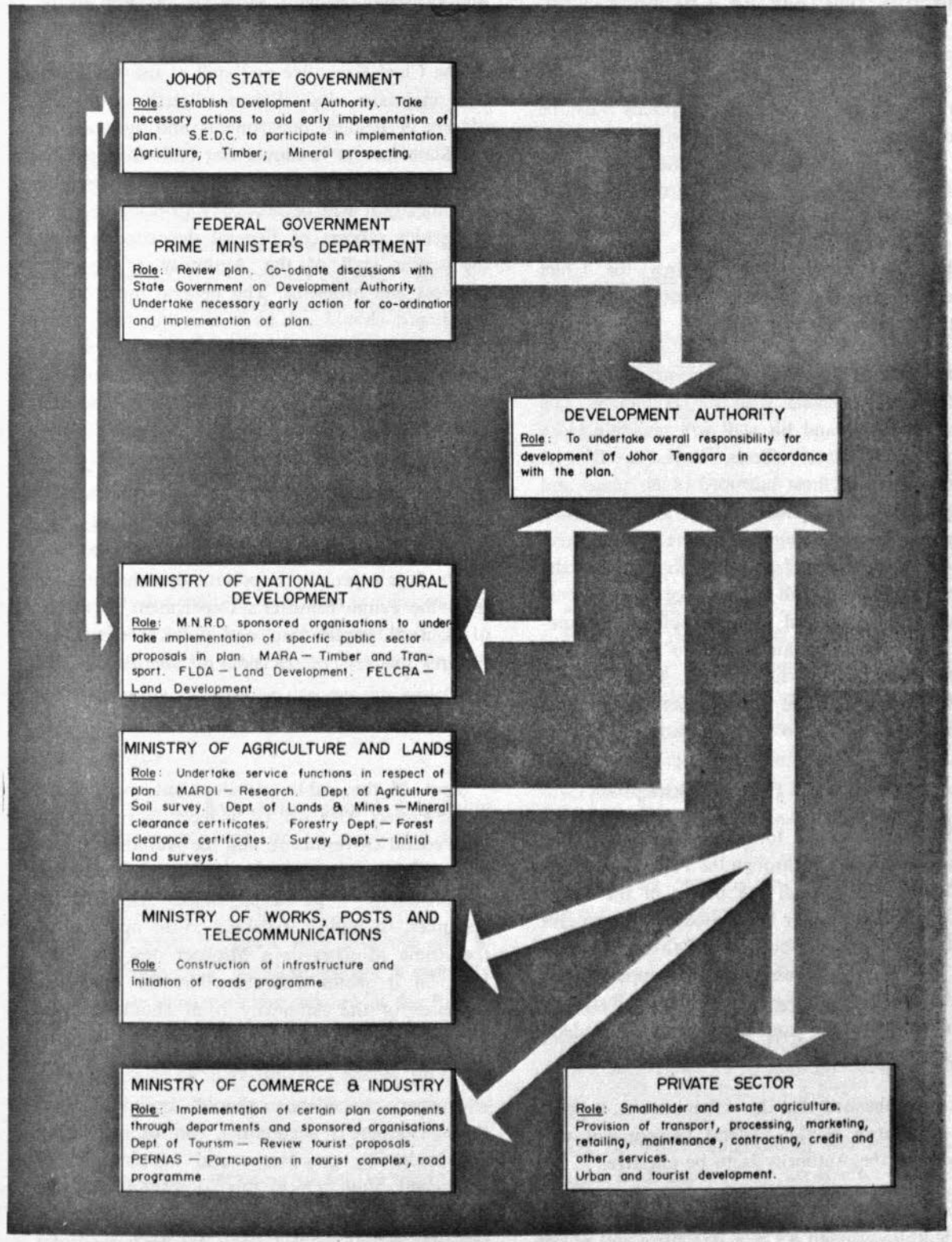
the Chief Executive will need especially in the first years, it is strongly recommended that two additional senior professional men with wide general experience of development planning and implementation in a variety of countries be appointed immediately by direct recruitment or on technical assistance. The first should have specialist knowledge of agriculture and land development. The second should have special experience in development of new towns and villages, the provision of services and the settlement of new populations. The Chief Executive should also be able to call on short term specialists in various disciplines as he may require.

RELATIONSHIPS WITH GOVERNMENT DEPARTMENTS AND IMPLEMENTING AGENCIES

RELATIONSHIPS WITH STATE GOVERNMENT

Through the Chairman of the Board, who is the Menteri Besar or appointed by him, and through the State members, the Board is linked with the Executive Council and the State administration.

The Policy Board will authorise all major policy proposals, plans and recurrent and capital budgets submitted by the Chief Executive. The proposed powers of the Board in these respects are set out in Supporting Volume 9.


JOHOR STATE GOVERNMENT
Role: Establish Development Authority. Take necessary actions to aid early implementation of plan. S.E.D.C. to participate in implementation. Agriculture; Timber; Mineral prospecting.
FEDERAL GOVERNMENT PRIME MINISTER'S DEPARTMENT
Role: Review plan. Co-odinate discussions with State Government on Development Authority. Undertake necessary early action for co-ordination and implementation of plan.
DEVELOPMENT AUTHORITY
Role: To undertake overall responsibility for development of Johor Tenggara in accordance with the plan.
MINISTRY OF NATIONAL AND RURAL DEVELOPMENT
Role: M.N.R.D. sponsored organisations to undertake implementation of specific public sector proposals in plan. MARA — Timber and Transport. FLDA — Land Development. FELCRA — Land Development.
MINISTRY OF AGRICULTURE AND LANDS
Role: Undertake service functions in respect of plan. MARDI — Research. Dept. of Agriculture — Soil survey. Dept. of Lands & Mines — Mineral clearance certificates. Forestry Dept. — Forest clearance certificates. Survey Dept. — Initial land surveys.
MINISTRY OF WORKS, POSTS AND TELECOMMUNICATIONS
Role: Construction of infrastructure and initiation of roads programme.
MINISTRY OF COMMERCE & INDUSTRY
Role: Implementation of certain plan components through departments and sponsored organisations. Dept. of Tourism — Review tourist proposals. PERNAS — Participation in tourist complex, road programme.
PRIVATE SECTOR
Role: Smallholder and estate agriculture. Provision of transport, processing, marketing, retailing, maintenance, contracting, credit and other services. Urban and tourist development.

Final approval, especially if State expenditure is involved, rests with the Executive Council; but discussion in ExCo should be limited to policy questions and approval should be rapid. If ExCo wishes to propose amendments to plans approved by the Board such proposals must be referred back to the Board for further consideration. Links through the common members should ensure that the need to refer back does not often arise.

The State Government appoints the Chief Executive and senior staff with concurrence of the Federal Government.

The State Government will ensure cooperation by State departments with the Authority. The Chief Executive and his staff will maintain close contact with State officers, including District Officers, keeping them informed of his plans and being informed of plans in their districts when these may affect development of the Project Area. It will be necessary from time to time for the Chief Executive to call meetings of State officers to examine plans and problems of implementation: he should be authorised to do this. The Chief Executive or his deputy should attend meetings of the State Development Committee when the Project is to be discussed.

Relationships with Federal Government

The Authority is formally linked with the Federal Government through the Federal members of the Board, through the power of the Prime Minister, or a Minister designated by him, to give directions, to approve budgets and to issue finance, and through the requirement that appointments of the Chief Executive and senior staff should be made with the concurrence of the Federal Government.

It is emphasised that the active interest, support and assistance of the Federal Government will be vital if the Authority is to be effective.

Particular attention must be given to assisting the State to appoint a Chief Executive and senior staff of outstanding calibre who will have the confidence and support of the Prime Minister and of senior Federal Ministers, as well as of the State Government.

The Chief Executive and staff of the Authority will maintain close liaison directly with the officers of Federal departments and agencies, in the State and at headquarters, both through the Federal members of the Board and directly. Periodically it will be necessary to bring together the senior officers of Federal departments with the senior staff of the Authority to consider progress and problems. The Federal members of the Board should act as a standing facilitating committee, to be organised by the Prime Minister's Department, bringing in other departments as the Chief Executive of the Authority and the Prime Minister's Department may decide.

It is important that the Federal members of the Board should be senior officers preferably Deputy Secretaries who are able to take decisions on most questions which will commit their departments. It is especially important that the member from the Prime Minister's Department be aware of political implications and possible effects on Federal interests of decisions of the Board.

Financial Relationships with the Governments

Most of the public development expenditure in the Project Area will be financed by or through the Federal Government, and the Authority therefore will be responsible directly or indirectly for administering large expenditures of Federal resources. Its budget is subject to the approval of the Prime Minister or a Minister designated by him. So it seems desirable that the operating expenses of the Authority itself should not be borne by the State alone but be shared between the State and Federal Governments.

Treasury confidence should be established through design of accounting, control, estimating and budgetary procedures and appointment of competent staff. Once this is established the Authority should operate on block votes on a five-year rolling budget basis for both recurrent and capital expenditure.

Establishment and salaries should be flexible within a broad financial allocation and a broad manpower budget.

Relations with Implementing Agencies

The Authority will have power and resources to execute directly or by outside contract where existing departments or agencies cannot meet requirements on time or where no agency exists with responsibility to perform required functions. It is proposed that the Authority should directly control and finance the construction programme for 1971-75 and that it should be responsible for the establishment of the proposed cattle multiplication scheme. At a slightly later stage new town development corporations will be required: these could be established initially by the Authority and provided with technical services. In all such cases the Authority will control directly.

The development of productive activities and the provision of most of the normal services to the population in the Project Area will be undertaken by agencies or departments which are not directly controlled by, or financed through, the Authority.

Once agencies have been selected to develop certain areas of land or to carry out other development tasks, the Authority's main functions in relation to these agencies are—

(*a*) to keep in touch with progress and to confirm that the development is generally consistent with the policies of the Board;

(*b*) in conjunction with the agencies individually or in groups to indentify problems of implementation and to work out solutions;

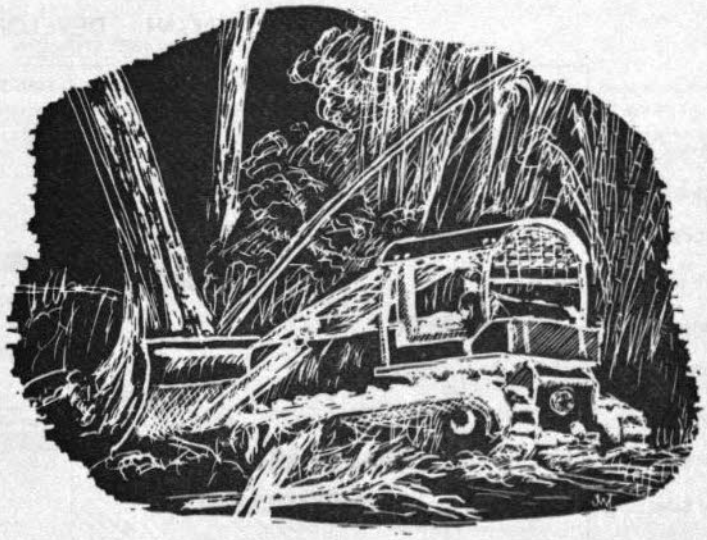
(*c*) to obtain information for forward planning of the provision of housing and all supporting technical and development services for incoming populations.

The Authority will work especially closely with those agencies which have continuing programmes of new development in the Project Area. FLDA is by far the largest. It has it's established arrangements for forward planning and giving notice to service departments of future needs. It is the Authority's responsibility to ensure that these plans and plans for other developments are mutually consistent, that service departments are given adequate warning and that they prepare to meet the future requirements arising from all developments. Any adjustments that may be necessary will have to be worked out jointly by the Authority, FLDA's regional organisation and headquarters and other agencies that may be concerned.

Once the development of an area for agriculture or of a project in another sector is under way, the Authority will only be concerned if it runs into problems which require outside action or if it affects other current or future developments. For example, the main task of the Authority with regard to the logging programme and timber industry complex is to ensure that an organisation is established and goes ahead with the programme on schedule. If the programme is delayed or diverges significantly from approved policies, the Authority will intervene and adjust plans, but not otherwise. Similarly, once land is allocated to a private estate company and initial development is carried out, the Authority is not concerned with internal operations. At a later stage it will evaluate the contributions to policy objectives of the various development methods and agencies that have been used in the area, but as a guide to policy and choice of agency for future development.

The Authority will gradually withdraw its direct interest from parts of the areas after completion of the initial land development, establishment of roads, infrastructure and services and the settlement of the first populations. Functions which it

has itself undertaken in those areas will be transferred to agencies responsible for those functions in the whole of the State. For this withdrawal to take place, the capacity of agencies serving the whole State must be expanded in time to take over functions performed by the Authority. Forward planning by the Authority and close liaison with the agencies concerned will show what needs to be done and, if it is done, will contribute to the general increase in capability of agencies serving the whole State. In the meantime a most important group of functions of the Authority, the functions of forward-looking co-ordination, evaluation and comprehensive development planning, need to be greatly strengthened for the State as a whole.

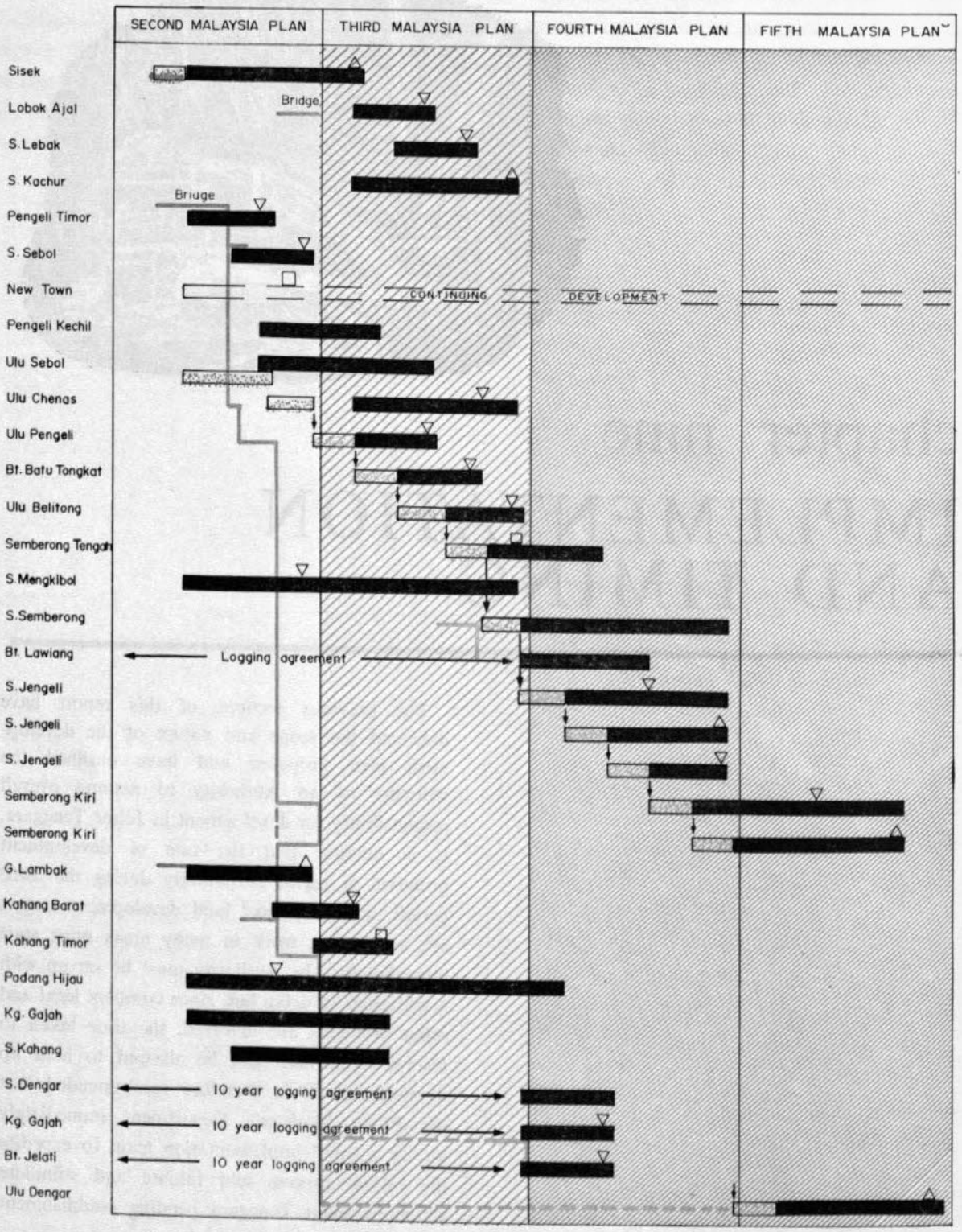


chapter nine

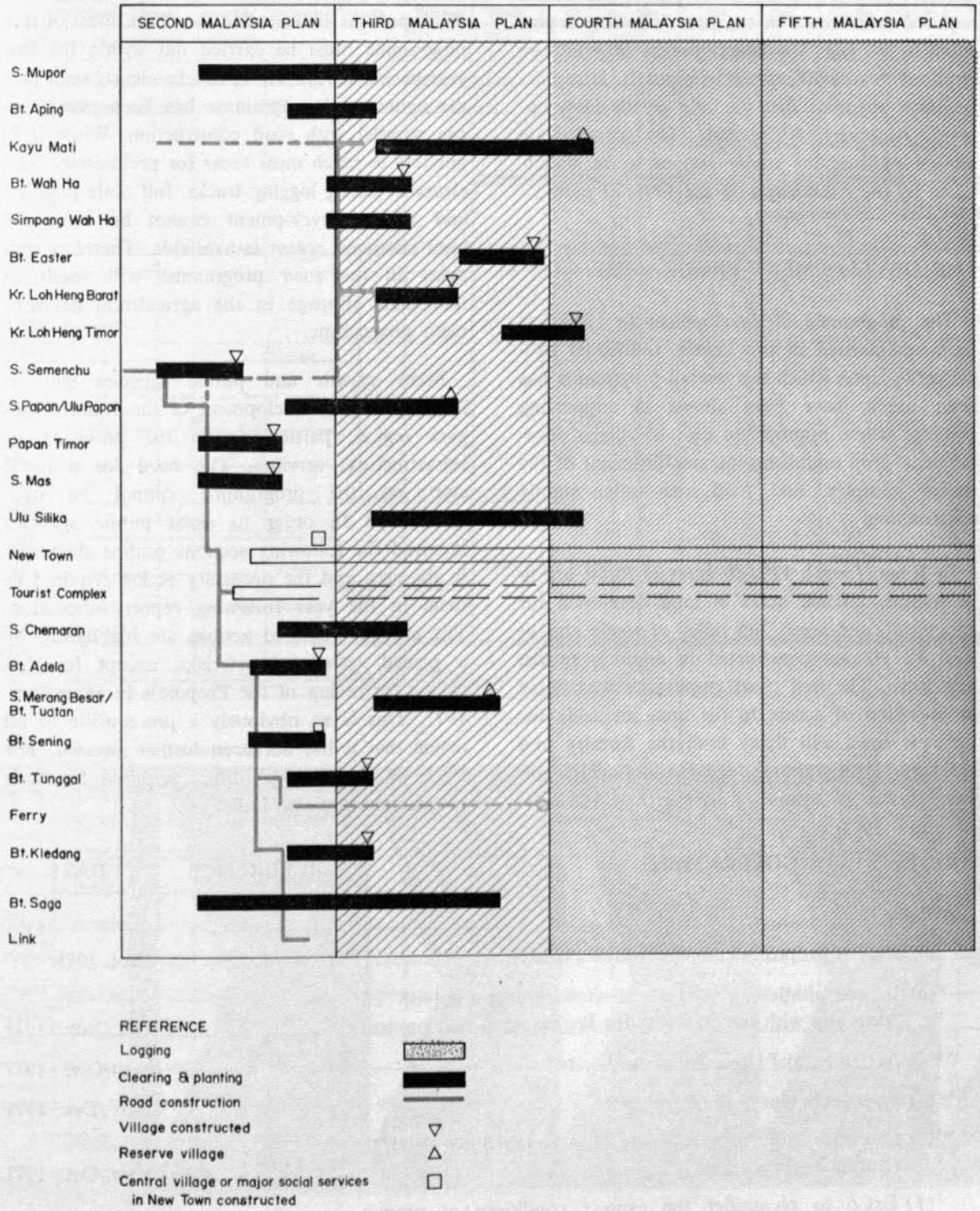
IMPLEMENTATION AND TIMING

The previous sections of this report have indicated the scope and nature of the development plan proposed and have outlined the structure of an Authority to assume overall responsibility for development in Johor Tenggara. It is obvious that the rate of development proposed is rapid, particularly during the SMP period, and, if project land development targets are to be met, work in many areas must start immediately. The Authority must be set up with a minimum of delay but, since complex legal and other problems are involved, the time taken to resolve them must not be allowed to hold up development. It is therefore recommended that the Prime Minister's Department immediately set up a small implementation team to expedite the review process and initiate and stimulate action in Johor Tenggara pending establishment of the Development Authority.

JOHOR TENGAH DEVELOPMENT PHASING



TANJONG PENGGERANG DEVELOPMENT PHASING



REFERENCE

- Logging
- Clearing & planting
- Road construction
- Village constructed
- Reserve village
- Central village or major social services in New Town constructed

This chapter first outlines the size and phasing of the development programme. It then summarises the roles of the major ministries and agencies involved in the development, the action required from them in the year following report submission and the development expenditure required to meet the project proposals. It rapidly becomes apparent that the role of the Development Authority is pivotal. The penultimate section outlines the major actions to be undertaken by the Authority over the 1971/72 period.

THE DEVELOPMENT PROGRAMME

The programme of development to 1990 has been summarised in two charts. Individual subnetworks, upon which this overall programme has been based, have been shown in supporting volumes where appropriate e.g., in village development, crop establishment, establishment of the timber complex, and road and water supply construction.

In Johor Tengah 119,000 acres of forest are to be logged, 180,000 acres of land developed for agriculture and some 245 miles of roads and at least 18 villages constructed in addition to the new town. The first chart emphasises that delay in provision of access to the area set aside for the new town will delay both the forestry and agricultural programmes, the bulk of which are scheduled to be completed by the early 1980's.

In Tanjong Penggerang, where 110,000 acres of agricultural land will be cleared and a coastal resort developed, some 200 miles of road must be constructed and at least 12 villages and a town developed. As indicated in the chart, most of this programme must be carried out within the five year period 1973-1978. It can be clearly seen that the agricultural programme has been phased to run parallel with road construction. While it is possible to reach most areas for preliminary land clearance along logging tracks, full scale planting and village development cannot be continued until adequate access is available. Therefore any delay in the road programme will result in immediate slippage in the agricultural development programme.

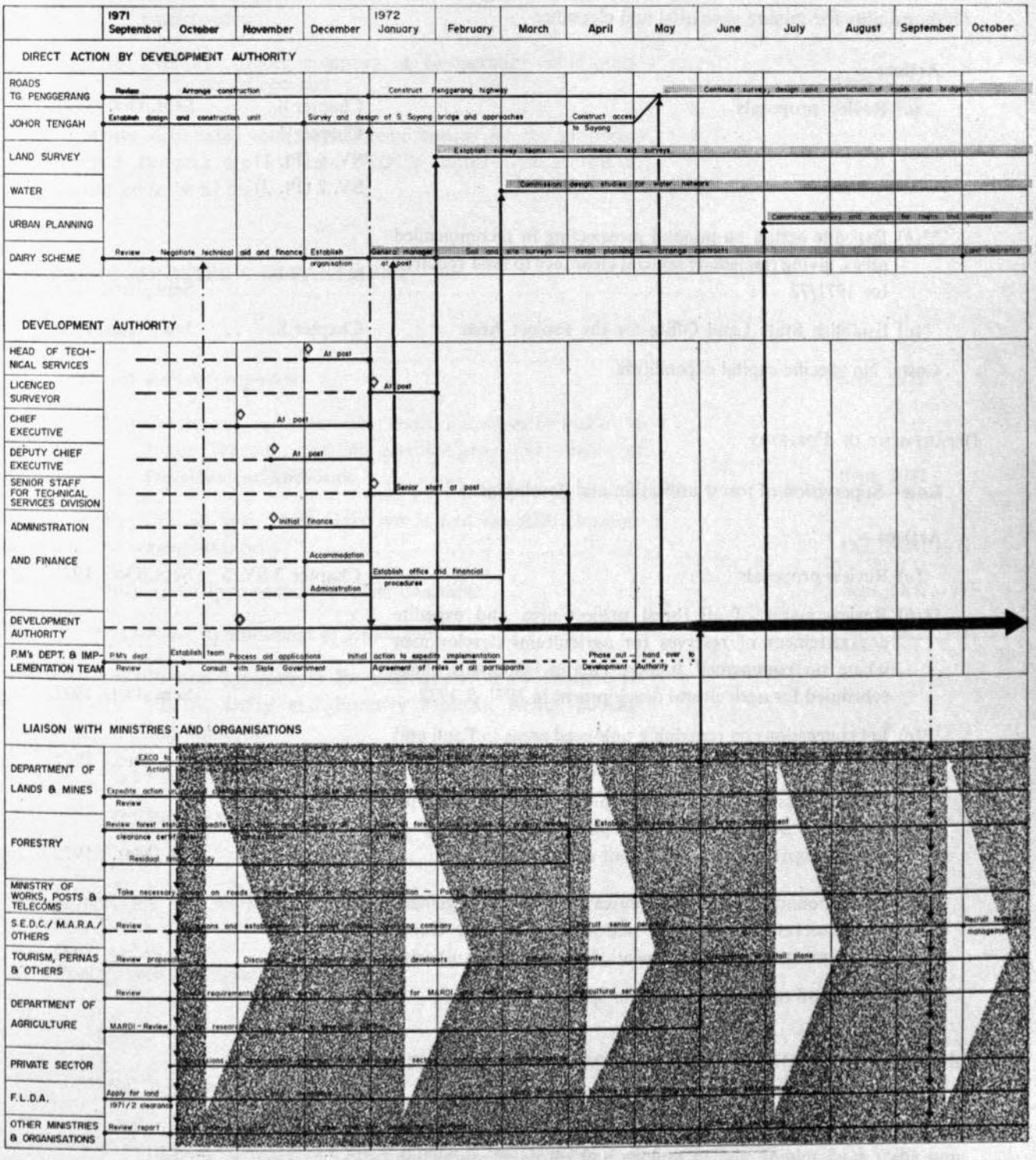
Many private and public agencies will be involved in the development of the Johor Tenggara region, particularly in the provision of infrastructural services. The need for a rapid start on the programme cannot be over emphasised In order to assist public agencies involved the following sections outline their role in the area and the necessary action required of them in the year following report submission. The urgently required actions are highlighted by a graded system of asterisks, except for that calling for review of the Proposals in September, 1971. This is so obviously a prerequisite to all action that it has not been further stressed. The levels of capital expenditure required for their programmes are also indicated.

JOHORE STATE GOVERNMENT	REFERENCE	DATE
Actions:		
(*a*) Review proposals and agree major principles of plan ..		Sept. 1971
*(*b*) In consultation with Federal Government establish an Authority with responsibility for Project Area development		Oct./Nov. 1971
**(*c*) Appoint Chief Executive of Authority		Sept/Oct. 1971
**(*d*) Appoint Senior Staff of Authority		Nov./Dec. 1971
**(*e*) Executive Council to alienate land required for 1971/72 clearance programme		Sept./Oct. 1971
(*f*) ExCo to reconsider the express conditions at present attaching to alienation orders	SV. 6 (Pt. 1) ..	1972

JOHOR TENGGARA

PHASING OF INITIAL IMPLEMENTATION

September 1971 — October 1972



	REFERENCE	DATE
DEPARTMENT OF LANDS AND MINES:		
Role—Initial control of land alienation for development and responsibility for mining alienation and clearance		
Actions—		
(*a*) Review proposals	Chapter 4 Chapter 6 SV. 6 (Pt. 1) SV. 2 (Pt. 2)	Sept./Oct. 1971
**(*b*) Expedite action on mineral prospecting in recommended areas, giving immediate mineral clearance to land required for 1971/72		Sept./Nov. 1971
*(*c*) Establish State Land Office for the Project Area ..	Chapter 8 ..	Jan./April 1972
Costs: No specific capital expenditure		
DEPARTMENT OF FORESTRY		
Role—Supervision of forest utilisation and development		
Actions—		
(*a*) Review proposals	Chapter 3 SV. 5	Sept./Oct. 1971
**(*b*) Review status of all forest project area and expedite degazettement of reserves for agricultural development where no commercial timber remains, especially those scheduled for agricultural development in 1971 & 1972 ..		Sept./Oct. 1971
*(*c*) Let concessions on remaining unlogged areas in Panti and Kluang forest reserves, for immediate exploitation ..		Oct./Dec. 1971
*(*d*) Agree status of all agreement areas and reserves with Development Authority and steps for orderly release of land for agricultural development as per plan		Jan./Mar. 1972
(*e*) Agree boundaries and procedures for joint management of conservation areas and national parks with Game Department, Water Departments, Development Authority		May/Aug. 1972
Costs—Standard operating budget, no special capital costs.		
JOHOR STATE ECONOMIC DEVELOPMENT CORPORATION (SEDC)		
Role—Commercial participation on behalf of the State in economic development projects in timber extraction, tin, limestone and silica sand mining and in tapioca and oil palm production on a nucleus estate basis.		

	REFERENCE	DATE
Actions—		
(*a*) Review plan proposals and decide on degree of immediate participation	Chapter 3 & 4	Sept./Oct. 1971
**(*b*) Establish timber company in co-operation with other public sector agencies		Oct. 1971/ Mar. 1972
Costs—Estimated total capital requirements for the proposed timber complex are \$16 mn. SEDC's contribution to this is assumed to be \$2 mn.	SV. 5	

PRIME MINISTER'S DEPARTMENT

Actions—		
(*a*) Review proposals		Sept. 1971
***(*b*) Create an implementation team and expedite action in Johor Tenggara pending establishment and staffing of Development Authority		Sept. 1971
*(*c*) Consult with State Government and establish Development Authority		Oct./Nov. 1971
**(*d*) Agree appointment of Chief Executive		Sept./Oct. 1971
**(*e*) Agree appointment of senior staff		Nov./Dec. 1971
(*f*) Process applications for international aid if desired, for FLDA, Dairy and Forestry Projects, Roads package and Surveyors		Oct./Nov. 1971
*(*g*) Establish organisation to run dairy schemes as per plan	SV. 6 Part 3 ..	Dec. 1971
(*h*) Review role of private sector		Jan./Mar. 1972

MINISTRY OF WORKS, POSTS AND TELECOMMUNICATIONS

PUBLIC WORKS DEPARTMENT

Role—

***(*a*) Initiation of road programme

(*b*) Construction of other infrastructure e.g. water supply systems, schools and other buildings, or supervision of contract work

	REFERENCE	DATE
Actions—(*a*) *roads*		
(i) Review road proposals (335 miles in SMP)	Chapter 7 SV. 8	Sept./Oct. 1971
(ii) Receive design for Penggerang Highway from Consultants		Sept. 1971
(iii) Arrange for direct labour construction or let contract ..		Oct./Dec. 1971
(iv) Establish unit to carry out road and bridge design and construction in Johor Tengah or commission design consultants		Sept./Nov. 1971
(v) Hand over to Technical Services Division of Development Authority		Apr./May 1972

Costs—Road programme costs are estimated to be:

Year	$Mn.	*Period*	$Mn.
1971	4.9	1971-75	82.6
1972	15.7	1976-80	43.3
1973	18.9	1981-90	11.4
1974	17.3		
1975	25.8		
Total—SMP ..	82.6	1971-90	137.3

(*b*) *Water Supplies*

(i) Review water proposals	Chapter 2 SV. 3	Sept./Oct. 1971
(ii) Agree programme of work, use of contractors and liaison procedure with Development Authority ..		March 1972

Costs—Water supply including reticulation, will cost:

Year	$Mn.	*Period*	$Mn.
1971	—	1971-75	15.3
1972	5.1	1976-80	5.3
1973	2.3	1981-90	6.4
1974	2.0		
1975	5.9		
Total—SMP ..	15.3	1971-90	27.0

	REFERENCE	DATE

POSTAL SERVICES DEPARTMENT

Role—Provision of postal services

Actions—

(*a*) Review proposals for provision of postal facilities ..	Chapter 7 SV. 8	Sept./Oct. 1971
(*b*) Agree responsibilities and establish liaison procedures with JKR and Development Authority		Apr. 1972

Costs:

1971-1975 ..	$ 0.2 mn.
1976-1980 ..	$ 0.5 mn.
1981-1990 ..	$ 1.2 mn.
Total ..	$ 1.9 mn.

TELECOMMUNICATIONS DEPARTMENT

Role—Provision of telecommunication services

Actions—

(*a*) Review proposals for establishment of telecommunication facilities	Chapter 7 SV. 8	Sept./Oct. 1971
(*b*) Agree construction programme with Development Authority and establish liaison procedures		April 1972

Costs—Estimated capital costs by 5-year Plan periods are:

1971-1975 ..	$ 1.4 mn.
1976-1980 ..	$ 0.8 mn.
1981-1985 ..	$ 1.4 mn.
1986-1990 ..	$ 1.9 mn.
Total ..	$ 5.5 mn.

MINISTRY OF AGRICULTURE AND LANDS

FORESTRY DIVISION

Actions—

(*a*) Review proposals	Chapter 3 SV. 5 ..	Sept./Oct. 1971
*(*b*) Co-ordinate existing studies on residual timber	Chapter 3 SV. 5 (App. E) ..	Sept. 71/Mar. 1972
(*c*) Agree boundaries and procedures for joint management of conservation areas and national parks with Game Department, Water Department and Development Authority		May/Aug. 1972

	REFERENCE	DATE
DEPARTMENT OF SURVEYS		
Role—to ratify surveys carried out by the licensed surveyor of the Development Authority		
****Action**—to agree with the Implementation Team the above role and procedures for survey in Johor Tenggara	SV. 9	Sept./Oct. 1971
DEPARTMENT OF ORANG ASLI		
Role—supervision of Orang Asli reserves		
Action—no immediate action required. Apply for land for extension to S. Semangar reserve if desired and approach appropriate agencies for any requirements	Chapter 4	
AGRICULTURE AND VETERINARY DIVISIONS		
Role—provision of agricultural and veterinary advisory services, execution of detailed soil surveys where required		
Action—review proposals	Chapter 4 .. SV. 2 & 6	Sept./Oct. 1971
Costs—no specific capital expenditure		
MARDI		
Role—establishment and operation of regional research station		
Actions—		
(*a*) Review research programme proposals	Chapter 6 .. SV. 6 (Part 1)	Sept./Oct. 1971
*(*b*) Complete application for land		Sept. 1971
(*c*) Conduct detailed soil survey and establish station ..		1972
GAME DEPARTMENT		
Role—Joint supervision of conservation areas and national parks		
Actions—		
(*a*) Review proposals		Sept./Oct. 1971
(*b*) Agree boundaries of conservation areas, nature reserves and national parks with Development Authority, Forestry and Water Departments. Agree management procedures	Chapter 1 .. SV. 5 (Part 3)	May/Aug. 1972

	REFERENCE	DATE
MINISTRY OF NATIONAL AND RURAL DEVELOPMENT		
FLDA		
Role—Principal land development agency in Project Area		
Actions—		
(*a*) Review proposals and feasibility study	Chapter 4 .. SV. 6 (Pt. 1 & 2)	Sept./Oct. 1971
**(*b*) Agree SMP programme with Ministry, Treasury and State		Sept./Oct. 1971
(*c*) Proceed as per plan and established procedures. Apply for international aid if desired		
(*d*) Establish liaison procedures with Development Authority		Jan. 1972

Costs—Estimated development costs(1) are:

Year	$*Mn.*	*Period*	$*Mn.*
1971	1.2	1971-75	60.3
1972	5.1	1976-80	131.3
1973	11.6	1981-84	39.0
1974	20.7		
1975	21.7		
Total ..	60.3	1971-84	230.6

MARA

Role—Proposed partner with SEDC and others in timber company. Provision of certain transport services. Possible partner in oil palm and/or tapioca nucleus estates

Actions—

(*a*) Review report proposals	Chapter 3, 4 & 7 SV. 5 SV. 8	Sept./Oct. 1971
**(*b*) Consult with State Government and SEDC on establishment of organisation to construct and operate timber complex		Nov. 1971/ Mar. 1972
(*c*) Establish company, recruit senior personnel and commission design of sawmill		Mar./Sept. 1972
(*d*) Review programme of transport division in Johor with Development Authority		1971/1972
(*e*) Review possible participation in nucleus estates		

Costs—MARA's assumed share of the timber complex capital costs is $6 million.

(1) These development costs should not be confused with the financing requirements of FLDA as set out in Table 10.5. The latter takes account of repayments from settlers.

	REFERENCE	DATE
MINISTRY OF COMMERCE AND INDUSTRY		
DEPARTMENT OF TOURISM		
Role—Co-ordination of national tourist programme ..	MP. 5 SV. 7 ..	Sept./Oct. 1971
Action—Review project proposals		
PERBADANAN NASIONAL BERHAD (PERNAS)		
Role—Participant in development e.g. in tourism and provision of supporting or contracting services		
Actions—		
(*a*) Review project proposals	Chapter 5 SV. 7 ..	Sept./Oct. 1971
(*b*) Agree with Development Authority its responsibilities in Project Area e.g.:		
(i) Participation in tourist complex		
(ii) Appointment of consultants for design of tourist complex		Jan./May 1972
MINISTRY OF EDUCATION		
Role—Establishment and operation of educational institutions		
Actions—		
(*a*) Review education construction proposals	Chapter 7 SV. 8 SV. 4 (App. 4) ..	Sept./Oct. 1971
(*b*) Agree responsibilities and establish liaison procedures with Development Authority and Public Works Department		March 1972
(*c*) Note estimated date of requirement of first primary school		Sept. 1973

Costs:

Year	$*Mn.*	*Period*	$*Mn.*
1971	—	1971-75	3.0
1972	—	1976-80	9.5
1973	0.3	1981-85	9.3
1974	1.3	1986-90	15.6
1975	1.4		
Total ..	3.0	1971-90	37.4

NATIONAL ELECTRICITY BOARD

Role—Provision of electricity supplies

Actions—

(*a*) Review proposals .. .. Chapter 7 SV. 8 .. Sept./Oct. 1971

(*b*) Agree on construction programme and establish liaison procedures with Development Authority .. .. .. April 1972

Costs—Estimated capital costs of the programme are:

Year	$*Mn.*	*Period*	$*Mn.*
1971	—	1971-75	5.4
1972	1.4	1976-80	6.5
1973	1.8	1981-85	4.9
1974	0.9	1986-90	8.9
1975	1.3		
Total SMP ..	5.4	1971-90	25.7

MINISTRY OF HOUSING AND LOCAL GOVERNMENT

Town and Country Planning Department

Role—Although it is proposed that regional planning and village and town design be carried out by the Technical Services Division of the Development Authority, the technical work load will demand considerable assistance from the Department. If delay occurs in establishing the Authority a planning team should be attached to the office of the Town Planner for Johor in order to enable planning work to proceed on schedule .. .. .. Chapter 8 SV. 8

Fire Services

Actions—

(*a*) Review plan proposals .. .. Chapter 7 SV. 8 .. Sept./Oct. 1971

(*b*) Establish liaison procedures and responsibilities with Development Authority

Costs—Estimated capital costs are:

1971-1975	$0.5 mn.
1976-1980	$0.9 mn.
1981-1985	$0.2 mn.
1986-1990	$0.2 mn.
Total ..	$1.8 mn.

	REFERENCE	DATE
MINISTRY OF HEALTH		
Role—Establishment and operation of health service facilities		
Actions—		
(*a*) Review health proposals	Chapter 7 SV. 4, 8 ..	Sept./Oct. 1971
(*b*) Establish liaison procedures with Development Authority and JKR.		March 1972

Costs—Capital expenditure by Plan periods is:

1971-1975	$ 0.6 mn.
1976-1980	$ 0.7 mn.
1981-1990	$ 0.5 mn.
1971-1990	$ 1.8 mn.

MINISTRY OF HOME AFFAIRS

Role—Organisation of police services

Actions—

(*a*) Review project proposals	Chapter 7 SV. 8 ..	Sept./Oct. 1971
(*b*) Establish liaison procedures with Development Authority		April 1972

Costs—Capital costs incurred are relatively small and in summary are:

1971-1975	$ 0.3 mn.
1976-1980	$ 0.5 mn.
1981-1985	$ 0.7 mn.
1986-1990	—
Total ..	$ 1.5 mn.

THE DEVELOPMENT AUTHORITY

The roles of the major public and private agencies which will be involved in the initial development of Johor Tenggara are summarised on the chart in Chapter 8. It is clear that the Authority will play a pivotal co-ordinating and initiating role in this development. The major functions of the Authority may be summarised:

(1) Co-ordination of activities of other public and of private agencies.

(2) Supervision of design and construction of roads, water supply and other infrastructure including housing.

(3) Carrying out all field survey work required in the Project Area.

(4) Operation of Project State land office to handle all alienation of land in the Project Area, subject to the approval of the State Executive Council.

The responsibilities and required tasks of government agencies outlined in the previous section indicate that the Implementation and Technical Services Divisions must be operating by early 1972. The following time-table must be adhered to if development is not to be delayed. This programme has been devised to allow an orderly build up of personnel principally over the six month period January-June 1972.

** (1) Appoint Chief Executive	September/October 1971
** (2) Appoint remaining Senior Staff, Controllers, Senior Engineers and Licensed Surveyor	November/December 1971
** (3) Establish Technical Services Division	January 1972
** (4) Establish survey teams Begin field survey work	February, 1972
* (5) Begin or commission survey and design work for S. Lebam and S. Pengeli water schemes	March 1972
(6) Assume responsibility for ensuring completion of road programme	April/May 1972
(7) Take over responsibility for dairy project	April/May 1972
* (8) Agree roles of other public agencies and organisations in Johor Tenggara with them	December 1971/April 1972
** (9) Establish Project State Land Office and procedures for alienation in Johor Tenggara and publicise availability of land	January/May 1972
* (10) Define responsibilities and liaison procedures with Town and Country Planning Department, and begin survey for and design of villages and new towns	June/July 1972
(11) Begin discussions on provision of housing and commercial facilities and roles of possible participants, e.g., property developers and building societies	August/September 1972

TECHNICAL SERVICES DIVISION

***Survey:** assuming that the Division Head is appointed and at post by January 1972 it is recommended that top priority be given to establishing survey teams. By the end of the year approximately 6 teams will be required with a full complement of equipment and office support staff. Since at least 20,000 acres must be surveyed in 1972 and in 1973 initial survey of urban lots in the two new towns will be required, it is essential that the survey section be operational as soon as possible. Because of the urgency of this task immediate consideration should be given by the Implementation Team to seeking technical assistance in this field.

***Water:** it is recommended that next priority be given to establishing a unit responsible for design and supervision of construction of the required water supply systems since the design and construction process takes at least two years and first water supplies will be required at the end of 1973.

***Roads:** it is recommended that since the PWD has already commissioned design work on the Penggerang Highway it similarly commission design for the main highway in Johor Tengah, at least as far as the new town site, and also let initial contracts for the Penggerang Highway. The initial road units within the Authority should be established by May 1972 and able to take over responsibility for the road programme.

Development Implementation Division

The major initial function of this division will be to liaise with the other public agencies involved in development in the region to establish individual responsibilities within the overall programme. Once the Project State Land Office and survey teams are established the division should publicise the availability of land to potential private developers and initiate smallholder land schemes as proposed in the Master Plan. Later in 1972 it would be advisable to begin discussions with potential urban developers, since intial construction in the two new towns is scheduled to begin in 1973.

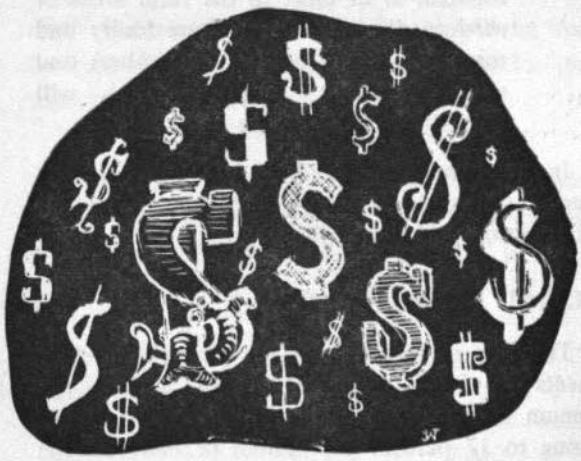
The division will also have to assume responsibility for the dairy cattle project as soon as possible.

Administration and Planning

The establishment and staffing of the Authority itself will be a major task. In addition the Project State Land Office must be established. The latter must in effect take over the work of the Kota Tinggi office and part of that of Kluang. This in itself will involve the transfer of a considerable volume of records which must be updated immediately if planning for the Project Area is to be effective. It is anticipated that these tasks will fully occupy the administration and planning staff for at least the first six months.

Revision of Master Plan

A further responsibility of the Development Authority in conjunction with the Prime Minister's Department and the Johor State Government, will be to revise the Master Plan in the light of changing costs, yields, prices and other factors. Guidelines as to the methods of linking the objectives and investment appraisal are contained in the Working Paper entitled *"Objectives, Policy Issues and Appraisal Methods"*.



chapter ten

ECONOMIC AND FINANCIAL EVALUATION

ECONOMIC CONTRIBUTION TO THE ECONOMY

The Plan gives a rate of return to the economy of 17 percent per annum. Relative to most other types of investment in Malaysia:

(i) it is labour intensive;

(ii) it has a favourable effect on the balance of payments having a high direct export, and low direct import content;

(iii) with the present tax and duty structure, it is favourable in its effect on public finance;

(iv) at present tax and duty rates, it is likely to prevent disparities from increasing, and with revised tax and duty rates, it could reduce the disparities; and finally,

(v) it provides good opportunities for development in or close to the rural areas of modern diversified agriculture (dairy and mixed farming), processing (timber) and service (tourist) industries which will embody a high training content.

In brief the Plan is likely to have relatively very favourable effects on employment, income distribution and economic growth.

SOCIAL PROFITABILITY

The rate of return from the planned developments in Johor Tenggara is 14 percent per annum on the basis of the initial tourist project rising to 17 percent per annum or more on the basis of a faster growth of tourism in the area. The rate of return from the agricultural development alone, that is excluding the forestry and tourist projects, is 13 percent per annum. These are the real rates of return to the economy of Malaysia and should be compared with other projects on the basis of:

(i) a shadow valuation of unskilled labour;

(ii) the exclusion from costs and benefits of all taxes and other transfer payments; and

(iii) the inclusion of all costs which are attributable to the development. Thus the costs of the infrastructure, which, in the absence of this project would be required elsewhere to cater for the natural increase in the population, are excluded.

Thus all labour which is semi-skilled or unskilled and which is assumed to be in surplus now and in the medium future in West Malaysia, is valued at $40 a month. All inputs and outputs are valued at forecast world prices, with duties and taxes being ignored since these are transfer payments from one part of Malaysian society to another. All road and bridge costs are assumed to be attributable to the project and are included; all water supply costs in excess of $1 per thousand gallons supplied (the standard charge in Johor State) are assumed to be attributable to the development; but it is assumed that all "social" infrastructure (the main item being schools) would be needed elsewhere in the absence of this development and the costs of this infrastructure are therefore not charged to the Master Plan development.

Table 10.1 shows the net costs and benefits of the development to the Malaysian economy valued on these principles. The table also shows the social rates of return from the development.

TABLE 10.1

JOHOR TENGGARA MASTER PLAN NET SOCIAL COSTS AND BENEFITS[1] 1971-1995

	1971-1975	*1976-1980*	*1981-1990*	*1991-1995*	*Present Value ($mn) 1971-75 at 15% per annum*	*Social Rate of Return (% per annum)*
1. *Agricultural Programme only:*						
Infrastructure	(95.5)	(41.9)	0.9	11.6	—	—
Agriculture	(77.7)	(39.8)	839.8	571.5	—	—
Net (costs)[2] / benefits	(173.2)	(81.7)	840.7	583.1	(27.0)	13
2. *The Master Plan (Initial Project):*						
Forestry	(6.2)	41.9	79.9	—	—	—
Initial Tourist Project	(10.3)	22.5	45.0	22.5	—	—
Net (costs)/benefits	(189.7)	(17.3)	965.6	605.6	(17.7)	14
3. *The Master Plan/Medium Tourist Development:*						
Medium tourist growth	(10.3)	18.4	255.6	305.2	—	—
Net (costs)/benefits	(189.7)	(21.4)	1,176.2	888.3	39.8	17

(1) For details see Working Paper "*Economic and Financial Evaluation of the Master Plan*" and the supporting volumes.
(2) Figures in brackets are costs where gross costs exceed gross benefits.

If the cut-off rate of return for all investment in the economy is assumed to the 15 percent per annum, the "surplus" earned by the Plan is $40 million over the 1971-95 period.

This rate of return is, if anything, understated because adjustments have been made to the financial cash flows for the major transfer payments and unskilled labour components only. Furthermore no allowance is made for the residual values of assets in the year 1995. As far as the tree crops are concerned these are likely to be small because many of the schemes will be due for replanting by 1995 but residual value for the road investments could be substantial.

The economic impact of the Master Plan was shown in Table 10.1. The value of gross output and the major taxes are shown in Table 10.2.

TABLE 10.2

JOHOR TENGGARA MASTER PLAN—VALUE OF OUTPUT AND MAJOR TAXES—1971-1995—$mn

Value of Gross Output	*1971-1975*	*1976-1980*	*1981-1990*	*Total 1971-1990*
Agriculture	3.1	167.4	1,440.7	1,611.2
Forestry	10.3	63.0	115.9	189.2
Tourism—medium growth ..	2.8	114.3	855.9	973.0
Total ..	16.2	344.7	2,412.5	2,773.4
Taxes/duties on oil palm and rubber	0.1	9.6	88.5	98.2
Royalties, premia and land rents	6.1	16.7	42.5	65.3

From 1975 onwards almost two thirds of the value of gross output is represented by the sales of palm oil, and from 1980 more than 20 percent consists of sales of rubber.

The proportion of the balance after the deduction of taxes and rents which would accrue as income to residents in Johor Tenggara is difficult to estimate since it depends on which contract services are provided from outside the region, what proportion of the non-FLDA acreage is developed by smallholders, and so on. But since a substantial proportion of the agricultural area will be under FLDA management, a substantial proportion of the financial cash flow will accrue to settlers in the form of dividends from 1980 onwards. From that year, about half the value of the output is likely to accrue as income to residents of Johor Tenggara.

EMPLOYMENT

Investments in developments of this type are relatively labour-intensive; the Plan will generate, in the leading sectors alone, more than 10,000 full-time jobs by the end of the SMP and almost 40,000 by 1990. The agricultural programme will provide direct continuing employment by 1990 for about 30,000 people on the basis of about 8½ planted acres per job. In addition to the direct employment in agriculture, there are likely to be almost 700 jobs provided by timber operations in the area between 1975 and 1985, and by 1990 at least 10,000 jobs in the tourist projects on the Penggerang coast. (Table 10.3).

In addition significant additional employment will arise both within and outside the Johor Tenggara Area in the service industries resulting from, and supporting, the leading sector industries. Additional employment within the Area should be at least 63,000 by 1990. The generation of such employment is a major objective of national policy and is a prerequisite to attaining the other major objectives, namely a reduction in disparities and the achievement of rapid economic growth.

TABLE 10.3

JOHOR TENGGARA MASTER PLAN—ADDITIONAL EMPLOYMENT—1975-1990

Sector		1975	1980	1985	1990
Agriculture	— Clearing	2,350	1,800	400	—
	— Settlers	4,530	11,210	12,950	12,950
	— Others	2,000	8,000	11,500	15,000
	— Management and Supervision	310	660	775	810
	— Processing	25	160	500	750
	Total ..	9,215	21,830	26,125	29,510
Forestry	— General	588	588	588	—
	— Management and Supervision	72	72	72	—
	Total ..	660	660	600	—
Tourism (medium growth)	— Management	70	310	670	1,200
	— Supervisory	180	780	1,680	3,000
	— Craftsmen	300	1,300	2,800	5,000
	— Auxiliary	50	210	450	800
	Total ..	660	2,600	5,600	10,000
Total "Leading Sectors" Services, etc.		(1)10,500	25,100	32,400	39,500
		(2) 4,200	12,500	19,400	23,700
	Total ..	14,700	37,600	51,800	63,200

(1) Rounded to the nearest hundred.

(2) Within the Johor Tenggara Area only.

THE BALANCE OF PAYMENTS EFFECT

The differential or incremental effect on the balance of payments of an investment of this type is very difficult to estimate because of the indirect effects and the uncertainty as to what the effect would have been in the absence of the investment. Nevertheless, if only the direct, first-round effects are considered, the effect of the project is extremely favourable. In the SMP period the effect would be slightly unfavourable but in the TMP and subsequent periods there would be a substantial favourable effect. During the Master Plan period, more than 85 percent of gross output would represent sales overseas (or attract income from abroad in the case of tourism), whereas only a small proportion of the costs would consist of direct imports.

TABLE 10.4

JOHOR TENGGARA MASTER PLAN—THE FOREIGN EXCHANGE EFFECT(1)

Million dollars

	1971-1975	*1976-1980*	*1981-1990*	*Total 1971-1990*
"Direct" Exports (2)	9	282	2,102	2,393
"Direct" Imports	28	108	445	581
"Direct" Balance	−19	+174	+1,657	+1,812

(1) "Direct" or first-round effect only

(2) Or income from overseas.

PUBLIC SECTOR FINANCE

Due to the substantial requirements of roads, bridges and scools, the development expenditure for infrastructure required in the SMP and TMP periods is large, totalling more than $170 million in these two Plan periods. The total development expenditure required over the 20 year period from 1971-90 from Central Government Departments will be about $224 million.

TABLE 10.5

JOHOR TENGGARA MASTER PLAN—PUBLIC SECTOR DEVELOPMENT EXPENDITURE AND FINANCING REQUIREMENTS(1)

Million dollars

	1971-1975	*1976-1980*	*1981-1990*	*Total 1971-1990*
1. DEVELOPMENT EXPENDITURE:				
1.1 *Central Government*—				
Roads and bridges	82.6	43.3	11.4	136.3
Water supplies	15.3	5.3	6.4	27.0
Schools	3.0	9.5	24.9	37.4
Telecommunications	1.4	0.8	3.3	5.5
Health and other services	3.4	6.3	6.7	16.4
Total ..	105.7	65.2	52.7	223.6
1.2 National Electricity Board (Project development only)	5.4	6.5	13.8	25.7
2. FINANCING REQUIREMENTS OF OTHER PUBLIC SECTOR ORGANISATIONS:				
FLDA	59.8	109.1	+(2)	—
MARA/SEDC(3)	7.4	+	+	+
PERNAS(4)	6.5	+	+	+

(1) For details, see the "*Economic and Financial Evaluation of the Master Plan*" Working Paper.

(2) A plus sign (+) denotes net receipts by the agency, and (−) denotes net payments.

(3) 50% of the Forestry Project.

(4) 50% of the Initial Tourist Project.

The financing requirements of the public sector agencies can only be indicative because of the uncertainty as to the proportion of the finance that may be provided from overseas or by the private sector. However the major financing requirement is clearly from FLDA which is expected to need about $60 million in the SMP and $109 million in the TMP period; after 1980, FLDA is expected to have a net income from Johor Tenggara.

As shown in Table 10.2 at the present tax and duty rates, there will be a substantial income to the State and Federal Governments. If attention is confined only to taxes and duties on oil palm and rubber, the total revenue to the Federal Government will rise from very little in the SMP period to almost $10 million in the TMP period. The total revenue to the Johor State Government from land rents, royalties and premia over the 20 year period from 1971-90 will be more than $65 million (compared to an annual budget in recent years of about $50 million); the revenue to the Federal Government over the same period from taxes on rubber and palm oil output will be almost $100 million.

ANNEXURES

annex a
STUDY ORGANISATION

The study was carried out between September 1st, 1969 and August 31st, 1971. The Consultants' team included professional staff working together on the interrelated components of the Master Plan, supported by individual consultants and institutions. The study organisation is illustrated in the table.

The concept of regional master planning of total resources is relatively new and that of early identification of alternative strategies for development virtually without parallel. The latter particularly requires substantial collection and analysis of data in the shortest possible time. But in a study of two years duration updating of material is essential.

In organising the work of the study team to meet the timing and sequence of planning activities documentation of material was carried out as follows:

1. Initially internal papers were provided identifying criteria, study procedures and methodology.

2. Technical papers (Association or Project Papers) were then issued describing preliminary concepts for planning. These were discussed with interested official bodies or working groups set up for specific purposes. These are retained on the study filing system.

3. The above technical papers were amended where necessary after discussion, and issued as Association Papers at the time of submission of the Draft Project Report.

4. For master planning purposes, working papers have been prepared which provide details in respect of many single aspects of development opportunities, more especially in regard to agricultural enterprises. These have been submitted in 75 copies. They have not been issued before and the titles are as follows—

Agriculture

Short-term Rotation Crops

Oil Palm

Rubber

Coconuts

Pineapples

Pepper

Fruits and Vegetables

Beef Production

Poultry

Pigs

Goats

Inland Fisheries

The Development of Mixed Enterprise Holdings

Meat Marketing in Johor

A comparison of Rubber and Oil Palms

Others

Survey of Existing Settlements

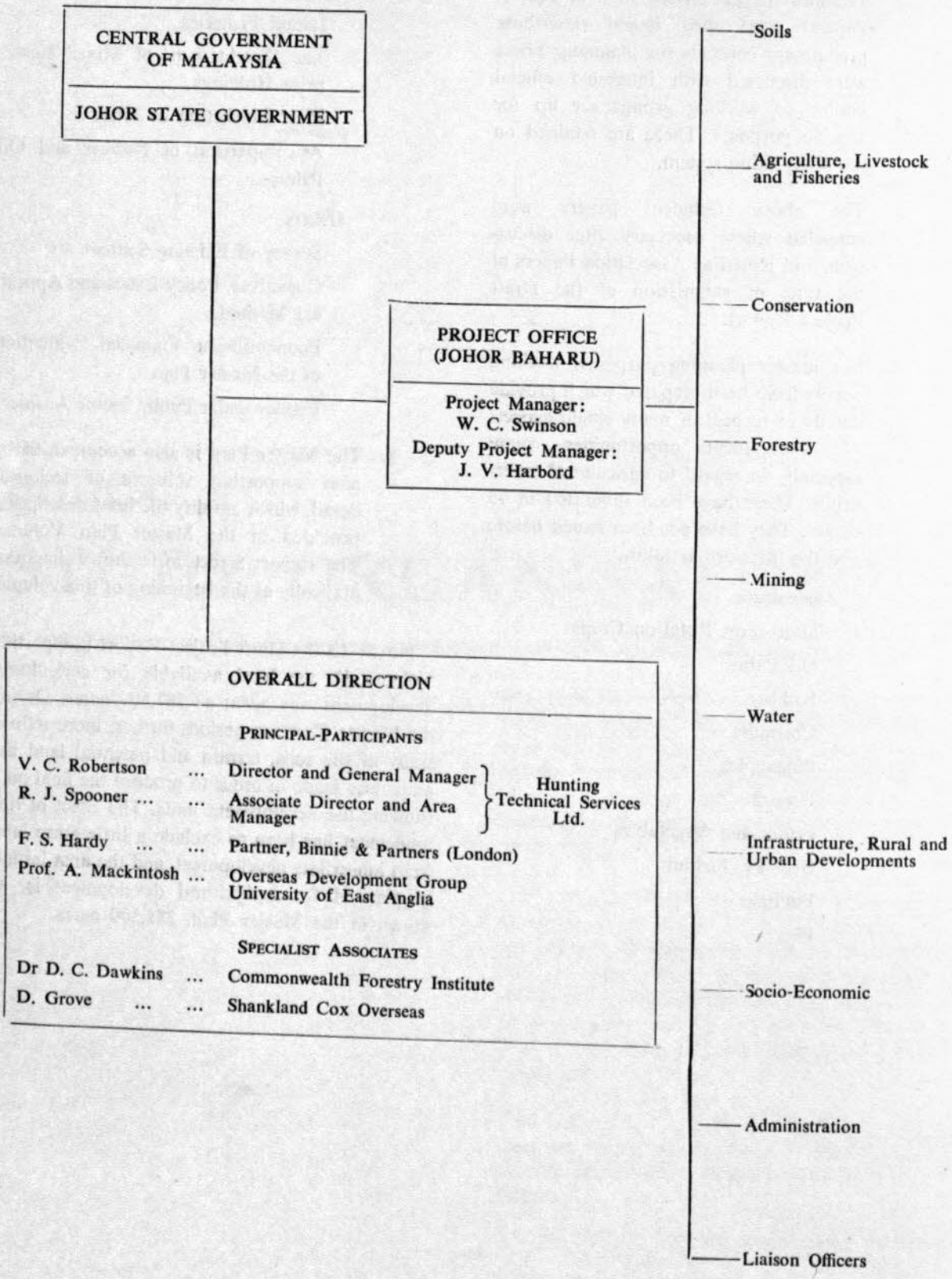
Objectives, Policy Issues and Appraisal Methods

Economic and Financial Evaluation of the Master Plan

Estates under Public Sector Auspices

5. The Master Plan is also accompanied by nine supporting volumes of technical detail, which amplify the brief description provided in the Master Plan Volume. The Report Structure is shown diagrammatically at the beginning of this volume.

NOTE: In the Draft Project Report (Supporting Volume 1), the land available for agricultural development was given as 287,500 acres. During the Master Planning period, further, more refined study of the soils, terrain and potential land use maps was made in order to produce the final map showing the development units. The effect of this refinement has been to exclude a little more land from immediate development, and the area initially planned for agricultural development is, as shown in the Master Plan, 281,500 acres.


CENTRAL GOVERNMENT OF MALAYSIA
JOHOR STATE GOVERNMENT
PROJECT OFFICE (JOHOR BAHARU)
Project Manager: W. C. Swinson
Deputy Project Manager: J. V. Harbord
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Hunting Technical Services Ltd.
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SPECIALIST ASSOCIATES
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D. Grove ... ... Shankland Cox Overseas
Soils
Agriculture, Livestock and Fisheries
Conservation
Forestry
Mining
Water
Infrastructure, Rural and Urban Developments
Socio-Economic
Administration
Liaison Officers

Soils

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Project Economist	C. B. Edwards
Development Economist	Dr J. C. English
Assistant Development Economist	C. R. Smith
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Liaison Officers

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Federal Government	A. Selvanathan (1969-70) Annuar bin Ma'aruf (1970-71)

annex b

SUMMARISED SCOPE OF WORK

The Consultants are specifically required to "Undertake the analysis of data available on the natural resources inherent in the regions and their development potential, and where necessary the survey and collection of additional data, to:

(*a*) determine the optimum cropping pattern, the form of settlement and the investment programme required;

(*b*) prepare an overall exploitation programme which provides for the processing of the exploitable timber species and effective management for the permanent productive or protective forest estate;

(*c*) identify possible mining and quarrying areas, with particular attention to the mining of minerals in the Tanjong Penggerang Region;

(*d*) utilize and conserve the inland water resources in an optimum manner to meet potable, industrial, crop processing and irrigation requirements. Special emphasis shall be given to the water conservation aspects of the Sungei Johor Catchment upstream of the Singapore Public Utilities Board intake;

(*e*) locate public communication, transportation and recreational or tourist facilities;

(*f*) locate sites for major centres of population, and industrial facilities for processing the agricultural, forest and other products; and

(*g*) determine the institutional needs, including marketing and management, of the individual programmes outlined above."

"The Consultants shall identify high priority projects within the Master Plan for further feasibility studies and after consultation with the Government undertake the preparation of such studies, as may be agreed, to a stage ready and in a form suitable for seeking financial assistance from international lending institutions".

The Consultants shall "make broad recommendations to the Central Government and Johore State Government for the development of the regions, by both the public and private sectors, including the institutional arrangements required for development in terms which are consistent with overall government social and economic goals. A draft report on this will be prepared by the Consultants for submission to the Central Government of Malaysia not more than 18 months after the start of the field work.

The draft report will outline alternate strategies for development and their broad economic implication which will be used as the basis for discussion between the Central Government of Malaysia, the Johore State Government, and the Consultants.

On the conclusion of these discussions the Consultants will collaborate with the Central Government of Malaysia and the Johore State Government in drawing up a policy framework, which will serve as the basis for further work.

Based on this framework, and working within the terms of government policy directives, the Consultants will prepare a phased programme, using network techniques (e.g., PERT/CPM) for the development of the regions which will cover:

(*a*) The Second Malaysia Plan Period (1971-1975).

(*b*) A perspective plan period of 20 years (1971-1990) on the assumption that primary development of the regions will be completed within this time period.

The phased programme of development will be in the form of a Regional Master Plan and will evaluate the impact of such a development on the national economy, with particular respect to:

(*a*) Finance (Federal/State, public, private, foreign aid, etc.). A projection is required of the net flows of financial resources over time in respect of each of the main agencies and sources of finance which are or may be involved.

(*b*) Man-power (labour requirements, skills, training, etc.).

(*c*) Productivity (size of agricultural holdings, processing units, etc.).

(*d*) The overall costs and benefits to the nation, whether or not these are reflected in the financial flows referred to under (*a*) above. Such costs and benefits are to be estimated for the programme as a whole and for identifiable phases and particular component parts. Where appropriate, attention should be given to the effect on overall net benefits of alternative courses of action.

The Regional Master Plan Documents shall be prepared and presented in such form and of such quality as to be suitable for presentation for loan assistance to an international lending agency (e.g., World Bank)".

annex c

RECOMMENDATIONS OF DRAFT REPORT

AGRICULTURE

Some 287,000 acres of undeveloped land, having an average slope of less than 20 degrees, were suitable for and should be converted to agricultural use.

Although there were many constraints to be removed before large scale diversification of agricultural activities could be implemented there could be promising opportunities for the cultivation of, for example, tapioca, pineapples, fruit and vegetables, fish and hybrid coconuts, and for the production of goats, pigs and poultry. However the best prospect was considered to be the development of a cattle industry for milk and beef production, primarily from grass, and this was identified as a high priority project.

FORESTRY

There are about 2.4 million FD tons of marketable timber in the Johor Tengah forest within the future agricultural and water catchment areas. This timber should be extracted and a separate timber complex set up to process 40 percent of it into various high value added commodities such as mouldings, kiln dried and air dried timber for export and local sale. This was identified as a high priority project. The remaining 60 percent should be processed by existing sawmills who would compete for logs on the open market with the timber complex.

An early and detailed study should be completed, by September 1971, of the opportunities for disposing of residual, at present unmarketable, timber for chipping.

The existing system of royalty and premium payments should be changed by combining the two elements, and awarding logging concessions to the highest bidder, with a reserve price based on an inventory estimate of the forest content. The proposed system would be simpler to administer, increase State revenue and encourage fuller exploitation of the timber, particularly of the less popular species.

TOURISM

An early and detailed study should be undertaken of the viability and development possibilities of a tourist centre on the beaches of central Tanjong Penggerang, which preliminary studies had identified as a high priority project.

CONSERVATION

Land steeper than 20 degrees slope should remain under forest and should not be exploited until the technical problems involved have been overcome so as to permit exploitation without impairing conservation. The main steep upland area, centred on Gunong Blumut, should be established as a national park for the preservation of wild life driven out of the area cleared for agriculture.

Extensive areas of peat swamp, unsuitable for agriculture, should be left under forest. In Tanjong Penggerang an area between Tanjong Kelesa and Tanjong Siang, containing a biological community of special scientific interest, should be gazetted as a Strict Nature Reserve.

WATER RESOURCES

Certain future water supplies would require the provisions of storage on the S. Linggiu, S. Kahang and S. Lebam. The catchments draining to the dam sites should be left as jungle.

IMPLEMENTATION

A public Development Corporation, with a mixed Federal/State policy board, should be established to plan and control the implementation of development in the two regions of the Project Area. This corporation would have full power to carry through the Master Plan, executing it directly through its own organisation (e.g., engineering services) or through subsidiaries (e.g., new town corporations, public estates, financial institutions) or jointly with or through separate operating agencies (e.g., Federal Land Development Authority (FLDA), State Economic Development Corporation (SEDC), private industry). The chief executive of the corporation should be appointed as soon as possible, preferably by April 1971, to take part in the master planning phase.

DEVELOPMENT STRATEGY

Four alternative strategies were offered, varying in their public/private sector shares and in their extent of deliberate creation of underemployment. It was recommended that the public and private sectors should share in land development in the proportion of approximately 75 percent public: 25 percent private participation. Two-thirds of the public sector area should be developed under public sector estates, and one third under public settlement schemes; both estates and settlements should employ only the numbers required for full time work.

annex d

STEERING COMMITTEE'S INSTRUCTIONS FOR MASTER PLANNING

MINERALS, SOILS AND WATER RESOURCES

In view of the considerable area of peat swamps excluded by the Consultants from development, a recommendation should be incorporated in the Master Plan for further research.

Recommendations should be made for further studies on the groundwater potential and the effects of jungle clearance on water availability and ecology. For this purpose the need to supplement the existing hydrological network for certain experimental basin studies should be mentioned.

The extent to which dredging of the S. Johor could relieve the intensity of floods at Kota Tinggi should receive attention in the Master Plan.

AGRICULTURE AND FORESTRY

Permanent hill forest should be defined to include all land over 20 degrees slope, not land above the 500 foot contour.

The boundary between the pontentially productive and the non-productive hill forests should be demarcated.

The hill forests should be managed jointly by the Game and Forest Departments.

Within the concept of multi-purpose use of the hill forest proposals should be made in the Master Plan for productive forestry management.

Instead of the proposed early study being made of the markets for residual timber, this timber in Tanjong Penggerang should be tendered out to any interested group on the basis of royalties to be paid, total value being assessed on the basis of an inventory. A later study in connection with the residual timber in Johor Tengah might be useful.

The proposed timber complex should be fully integrated with, and not, as proposed, separate from the logging programme.

The list of diversification activities considered by the Consultants should be expanded to include those rejected, with reasons for their rejection.

Detailed feasibility reports should be prepared for submission to possible foreign loan agencies on the following high priority projects:

(i) A package programme of about 75,000 acres gross for FLDA development in the Second Malaysia Plan period.

(ii) The dairy farm project.

(iii Logging and timber processing.

With regard to (i) the land recommended for allocation to FLDA should be chosen to facilitate economically equal distribution of holdings. The necessity to set aside a specific land package for FLDA development in subsequent plan periods should be mentioned, and areas suitable for development by FLDA or by a similar land settlement agency in the Third Malaysia Plan should be indicated in the Master Plan.

With regard to the dairy farm, the feasibility study should be confined to the establishment and running of a multiplication unit of the size that could be built up in the Second Malaysia Plan.

The agricultural plan should consider the merits of growing short term-crops adjacent to the proposed dairy farm.

DEVELOPMENT FRAMEWORK, TOURISM AND INDUSTRY

The Consultants should proceed with the outline planning of a major tourist resort on the Tanjong Penggerang coast. Within this general framework the principles for the design of an initial tourist complex to be established by 1975, together with its estimated costs and returns, should be produced in sufficient detail both to illustrate the potential to international lending agencies, private and public investors, and also to provide the basis for a detailed future design and investment development plan study.

The Master Plan should take into account the possibilities of stocking fresh water fish in the reservoirs on the S. Kahang, S. Linggiu and S. Lebam.

While it was agreed that no special efforts should be made to introduce non agro-based industries into the Project Area, the Master Plan should justify the types of industries that should be located within it.

The construction of all main roads in Johor Tengah and Tanjong Penggerang constituted a suitable package project for foreign financing, and should be presented in the Master Plan with this in view.

EMPLOYMENT, SOCIOLOGY, OBJECTIVES AND STRATEGIES

No premature innovations should be made in respect to settlement patterns and settler participation in management of the various land development schemes.

The Master Plan should take into account other land development schemes that are included in the SMP national programme as well as FLDA schemes.

Account should be taken of the development needs of the Orang Asli.

Although the strategy which aimed to provide full time work was to be preferred, its implementation should be phased and accommodated to the overriding need for rapid development through the agency of FLDA.

DEVELOPMENT CORPORATION AND OTHER AGENCIES

The public Development Corporation as proposed by the Consultants was not acceptable to the State, whose counter-proposals to use the SEDC did not fully satisfy vital Federal interests. The Consultants were instructed to put forward alternative arrangements for consideration by the State and Federal Governments. All alternatives must be State controlled and at the same time safeguard the vital interests of the Federal Government which would be the chief supplier of finance.

annex e
ACKNOWLEDGEMENTS

The Johor Tenggara project studies were carried out in collaboration with the Economic Planning Unit of the Prime Minister's Department and the Secretariat of the State Government of Johor. The considerable assistance and co-operation of both is acknowledged. Many other State and Government agencies contributed substantially to the work in various ways. Those which participated directly in project activities were:

MINISTRY OF AGRICULTURE AND LANDS

Department of Agriculture—Soil Science Division. This Division was responsible for the semi-detailed survey and mapping of the Johor Tengah Region and assisted throughout in the correlation of the soil series and provision of agronomic data. The analysis of all agricultural soil samples were carried out in the laboratory of the Division.

Forest Departments—The forest inventory and the utilisation study were greatly assisted by the co-operation of the State and Federal Forest Departments, which seconded Foresters, Forest Guards and Forest Woodsmen to the Project Staff for the field inventory and timber defect sampling. The Forestry Research Institute at Kepong assisted in a special study of Tiup[2] stands.

Survey Department—The printing of the one inch and quarter inch to one mile maps was undertaken by the Directorate of National Mapping staff.

Geological Survey Department—The Department undertook the research of records, collation of all available data and compilation of geological, prospecting and mining maps. A senior geologist was seconded to the Project throughout the study, assisted by field staff from time to time. Analyses of the Sumalayang limestone were also carried out by the Department.

Drainage and Irrigation Division—Assistance was provided throughout the hydrological study and all stream flow records and data were made available.

Federal Agricultural Marketing Authority—Data on prices of local agricultural commodities were provided throughout. An Economist was seconded for three months to assist in a survey of meat marketing in Johor.

Department of Orang Asli—This Department provided and installed the base radio set for radio communication between Project Headquarters and field parties, using the departmental network.

PRIME MINISTER'S DEPARTMENT

The Development Administration Unit seconded a senior officer from time to time to assist in the studies in connection with the establishment of a Development Authority and its relations to existing public Departments.

The Statistics Department assisted throughout the study in connection with population, trade and industrial statistics and with the socio-economic survey.

MINISTRY FOR WELFARE SERVICES

The Ministry seconded a senior officer for six months to assist the sociological studies.

MINISTRY FOR LOCAL GOVERNMENT AND HOUSING

The Town and Country Planning Department seconded an Assistant Commissioner to the Project for the first part of the study and a Town and Country Planner for the master planning period. Two technical assistants were also provided throughout the whole period of the study.

MINISTRY OF HEALTH

The Department of Chemistry carried out all analyses of water samples.

MINISTRY OF WORKS, POSTS AND TELECOMMUNICATIONS

The Public Works Department assisted throughout the study by providing costs and design criteria in connection with port, traffic, roads, water supplies and staffing.

MINISTRY OF DEFENCE

The Royal Malaysian Air Force provided planes and pilots as required from time to time for aerial reconnaissance of the Project Area. The Jungle Warfare School helped to rescue staff marooned in Johor Tengah in the 1971 floods.

MINISTRY OF NATIONAL AND RURAL DEVELOPMENT

FLDA provided assistance throughout the study in connection with costings, yield and scheme organisation, and permitted sociological studies and household surveys to be carried out on several schemes.

Outside Malaysia particular mention must be made of the help received from the Commonwealth Forestry Institute (Oxford), who assisted in designing the forest inventory and gave field guidance in the organisation of that work. The Institute also undertook the computer processing of the inventory data.

Other departments and public agencies in the following Federal ministries and State Government assisted the study by supplying data:

Ministry of Agriculture and Lands

Ministry of Commerce and Industries

Ministry of Education

Ministry of Home Affairs

Ministry of Labour

Ministry of Local Government and Housing

Ministry of National and Rural Development

Ministry of Transport

Johor State Department of Agriculture

Johor State Depatment of Lands and Mines.

Data were also received from the following public or official bodies, not directly within the above Ministries:

The Rubber Research Institute of Malaya

The University of Malaya

The National Electricity Board

Malaysian Railways

The Rubber Growers' Association

Commonwealth Development Corporation

Bank Negara Malaysia

United Nations (FAO) Forest Industries Project.

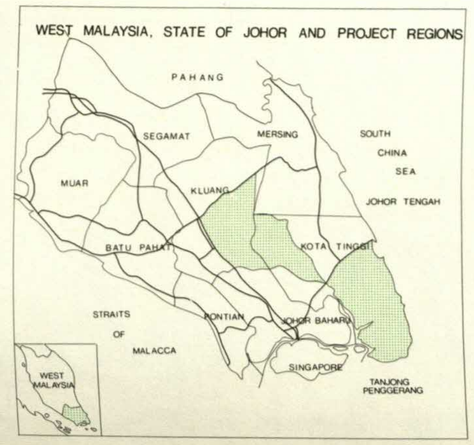
In the private sector much data were provided on rubber and oil palms by the estate agencies and on other possible activities by many organisations, businesses and individuals, too numerous to mention, both in and outside Malaysia. Finally, much useful information was obtained from many individual households, who co-operated in the various socio-economic surveys.

To all these organisations and individuals the consultants extend their warmest thanks.

GOVERNMENTS OF MALAYSIA AND STATE OF JOHOR

JOHOR TENGGARA MASTER PLAN

1971



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