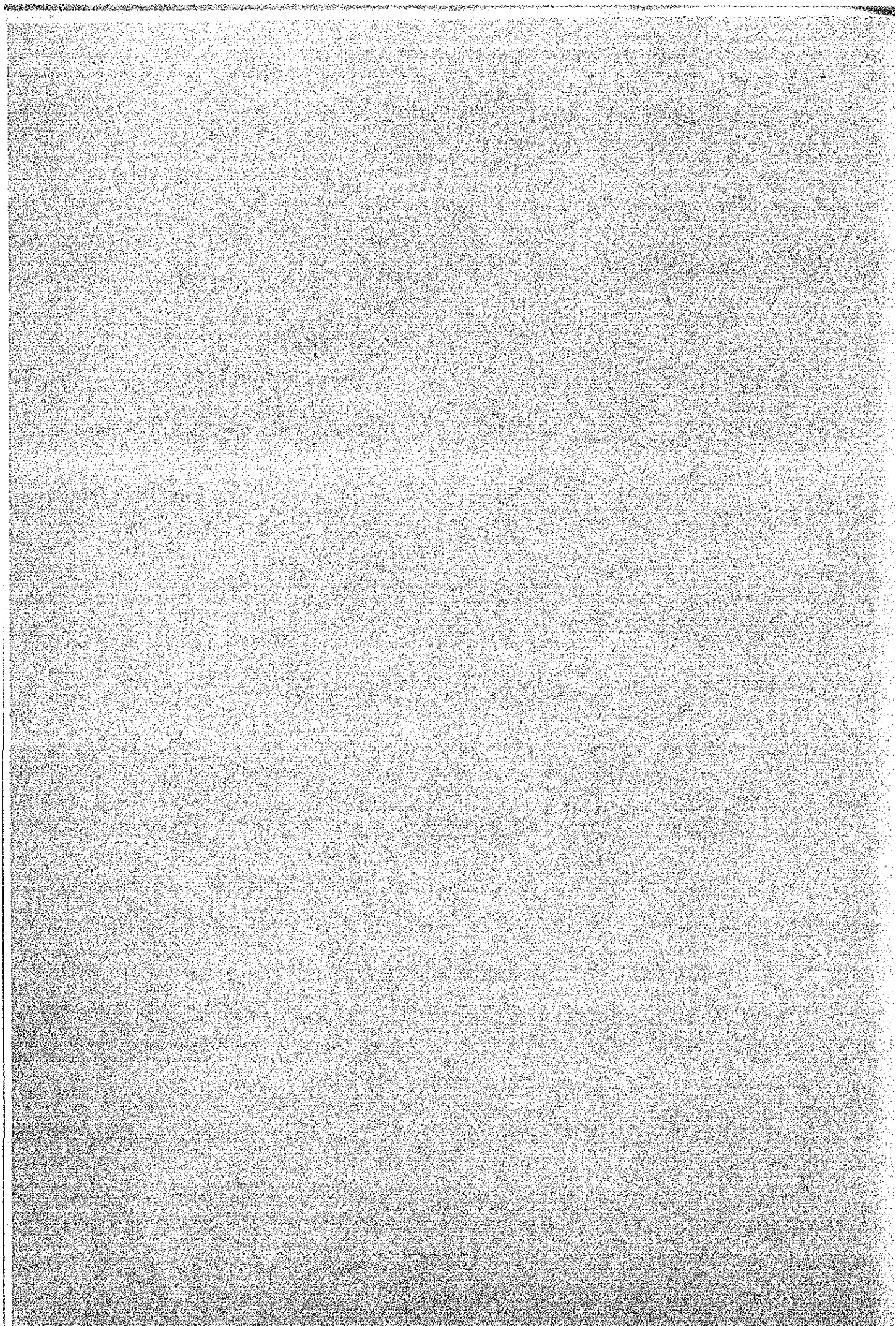


資 料 編



資 料 編

1. 基本設計調査	
1-1 調査団の構成	153
1-2 調査日程	154
1-3 マレーシア国政府関係面談者リスト	159
1-4 協議議事録	161
2. 類似施設概要	
2-1 Malaysia Agriculture Research Development Insitute	176
(MARDI)	
2-2 Bukit Tengah Provincial Wellesly	176
2-3 Veterinary Diagnostic Laboratory	176
3. 参考資料 (source : Ipoh Structural Plan)	
3-1 Overall Function Chart of Majlis Perbandaran, IPOH	177
3-2 Population Growth	178
3-3 Gross Product and Annual Real Growth Rate	178
3-4 Meteorological Data at IPOH	179
(source : Malaysian Meteorological Service)	
3-5 Conditions of Infra-structure	182
3-5-1 Drainage System and Flood Prone Area	182
3-5-2 Sewerage System	183
3-5-3 Water Supply	184
3-5-4 Telecommunication Services	185
3-5-5 Electricity Supply	186
3-5-6 Disposal Areas	187

1. 基本設計現地調査

1-1 調査団の構成

1) 基本設計調査団

担当業務	氏名	現職
総括	滝沢隆安	農林水産省家畜衛生試験場研究第一部長
無償資金協力	山本満幸	外務省経済協力局無償資金協力課
計画管理	寺西義英	国際協力事業団無償資金協力計画調査部 基本設計調査第一課
建築計画	三好康弘	(株)現代建築研究所
建築設計	井川正博	(株)現代建築研究所
設備計画	加藤義久	(株)現代建築研究所
研究計画兼 資機材計画	菊野達郎	(株)現代建築研究所

2) ドラフトファイナルレポート説明調査団の構成

担当業務	氏名	現職
総括	川村 齋	農林水産省家畜衛生試験場研究第二部 ウィルス第二研究室長
計画管理	寺西義英	国際協力事業団無償資金協力計画調査部 基本設計調査第一課
建築計画	三好康弘	(株)現代建築研究所
建築設計	井川正博	(株)現代建築研究所
研究計画兼 資機材計画	菊野達郎	(株)現代建築研究所

1-2 調査日程

1) 基本設計調査 (1985年11月28日-12月19日)

月 日	調 査 内 容
11/28 (木)	JAL 721 便にて調査団クアラルンプール着 ・大使館, JICA事務所, 長期調査員と協議
28 (金)	クアラルンプールよりイポーへ移動 ・獣医学研究所に表敬, 協議 ・長期調査員, 研修計画調査団と協議
30 (土)	・獣医学研究所と協議 ・長期調査員, 研修計画調査団と協議
12/ 1 (日)	・獣医学研究所の施設及び機材調査 ・建設予定地の調査 ・長期調査員, 研修計画調査団と協議
2 (月)	・獣医学研究所と協議 イポーよりクアラルンプールへ移動 ・長期調査員, 研修計画調査団と協議
3 (火)	・外務省アセアン事務局表敬, 協議 ・農業省獣医局と協議
4 (水)	・農業省獣医局と協議 ・調査団ミニッツ案作成し大使館, JICA事務所と打合せ
5 (木)	・農業省獣医局とミニッツ案協議
6 (金)	・農業省獣医局, EPU, アセアン事務局他とミニッツ案の 最終協議 ・ミニッツ署名

月 日	調 査 内 容
7 (土)	<ul style="list-style-type: none"> • 団内会議, 資料整理, 建築事情調査 • 現地協力事務所 (BEP AKITEK SDN.) 表敬訪問 • 研究資機材の調達事情調査 <ul style="list-style-type: none"> - Feizey Medical Suppliers etc
8 (日)	<ul style="list-style-type: none"> • 団内会議 • 収集資料の整理
9 (月)	<ul style="list-style-type: none"> • 団内会議 • 無償援助施設 (CIAST) の訪問
10 (火)	<ul style="list-style-type: none"> • 滝沢団長, 山本, 寺西両団員は離「マ」 • 農業省獣医局訪問 <ul style="list-style-type: none"> - 必要資料の収集依頼等 • 公共事業省訪問 <ul style="list-style-type: none"> - イポー獣医学研究所敷地内に建設予定の生物学的製剤製造棟の資料入手 - 建設資材単価, 労務費の資料入手 - 公共事務省 (イポー支局) の支局長との面会予約 • EPU訪問 - Governemnt Building Standard の入手他
11 (水)	<ul style="list-style-type: none"> • 現地協力事務所訪問 <ul style="list-style-type: none"> - 建設事情, 建設資材単価の資料入手他 • MARDI 訪問 <ul style="list-style-type: none"> - 養鶏場の視察他 クアラルンプールよりイポーへ移動
12 (木)	<ul style="list-style-type: none"> • 公共事業局 (イポー支局) 訪問 <ul style="list-style-type: none"> - 獣医学研究所の敷地図入手 - 獣医学研究所周辺のインフラストラクチャーについて質問書提出, 収集依頼

月 日	調 査 内 容
12 (木)	<ul style="list-style-type: none"> • イポー市役所訪問 <ul style="list-style-type: none"> － 建築許可申請について問合せ － LLNにおいて電気料金等調査 • 獣医学研究所訪問 <ul style="list-style-type: none"> － 現在使用中の研究材料，研究計画について協議 • 公共事業省・電気局（イポー支局）訪問 <ul style="list-style-type: none"> － 獣医学研究所の電力事情問合せ • 水道局訪問 <ul style="list-style-type: none"> － 獣医学研究所の水の供給事業問合せ
13 (金)	<ul style="list-style-type: none"> • 獣医学研究所訪問 <ul style="list-style-type: none"> － 現在使用中の研究材料，研究計画について協議 － 建設予定地の調査 • 公共事業省（イポー支局）訪問 <ul style="list-style-type: none"> － 建設現場視察 <p>イポーよりバタワースへ移動</p>
14 (土)	<ul style="list-style-type: none"> • ブキットテンガ地域獣医診断所訪問 <ul style="list-style-type: none"> － 診断活動，資機材等の調査 • 畜産増殖センター訪問 <ul style="list-style-type: none"> － SPF飼育のための参考資料の入手と調査
15 (日)	<ul style="list-style-type: none"> • 収集資料の整理
16 (月)	<ul style="list-style-type: none"> • JICA事務所訪問 • 科学技術環境省訪問 • 気象庁訪問 • 農業省獣医局訪問 <ul style="list-style-type: none"> － 回答書の入手 － 研修計画に関する協議 <p>(FAO/APHCA研修プログラム入手)</p>

月 日	調 査 内 容
17 (火)	<ul style="list-style-type: none"> • 積算事務所訪問 －建設資材単価，労務賃等の情報入手
18 (水)	<ul style="list-style-type: none"> • J I C A事務所訪問 －調査概要報告 • 大使館 －調査概要報告 • 公共事業省訪問 －イボ一獣医学研究所敷地内に建設予定の生物学的製剤 製造棟の資料入手 調査団 離「マ」
19 (木)	<ul style="list-style-type: none"> 調査団帰国

2) ドラフトファイナルレポート現地説明 (1986年3月27日-4月4日)

月 日	調 査 内 容
3/27 (木)	<ul style="list-style-type: none"> ・ JAL 721 便にて調査団クアラルンプール着 ・ 団内会議
28 (金)	<ul style="list-style-type: none"> ・ JICA 事務所にて計画概要説明, 日程等について協議 ・ 農業省獣医局にて, ドラフトファイナルレポート説明, 協議 ・ 日本大使館表敬
29 (土)	<ul style="list-style-type: none"> ・ 外務省アセアン事務届表敬, 協議 ・ 団内会議
30 (日)	<ul style="list-style-type: none"> ・ クアラルンプールよりイポーへ移動
31 (月)	<ul style="list-style-type: none"> ・ 獣医学研究所にて, ドラフトファイナルレポート説明, 協議 ・ 建設予定地補完調査 ・ イポーよりクアラルンプールへ移動
4/1 (火)	<ul style="list-style-type: none"> ・ 農業省獣医局にて協議 ・ 団内会議
2 (水)	<ul style="list-style-type: none"> ・ 農業省獣医局にてミニッツ案協議 ・ EPUにて, 建築計画について説明, 協議
3 (木)	<ul style="list-style-type: none"> ・ 農業省獣医局にてミニッツに署名交換 <p style="margin-left: 20px;">調査団 離「マ」</p>
4 (金)	<p style="margin-left: 20px;">調査団帰国</p>

1-3 マレーシア国政府関係面談者リスト

所 属 ・ 氏 名	現 職
<u>農業省獣医庁</u>	
Dr. Ahmad Mustaffa bin Haji Babjee	Director-General
Dr. Nik Mahmood bin Nik Mahamed	Deputy Director-General
Dato(Dr.) Kardin bin Haji Shukor	Asst. Director-General
Dr. Anwor Hassan	Director of Planning
Dr. Heng Ngak Hawe	Senior Veterinary Officer
Mr. Yahya bin Muhamad	Research Officer
<u>農業省国際局</u>	
Mr. Kamaruddin bin Sallah	Principal Asst. Secretary
Mr. Ab.Ghaffar A. Tambi	Asst. Secretary, ASEAN Affairs
<u>農業省獣医局獣医学研究所</u>	
Dr. Abdul Rahman bin Mahd.Sallah	Director
Dr. Gan Chee Hiong	Veterinary Officer
Mr. Christopher Kajamanickam	Head, Parasitology Section
Mr. Lo Hann Seang	Head, Viral Vaccines Section
Mr. Lim Kean Teik	Head, Arian Virology Section
Dr. Nor Aidah binti A. Rahim	Head, Bacteriology Mycology Section
Mr. D. Loganath	Head, Pathology Section
<u>ブキットテンガ地域獣医診断所</u>	
Dr. Chai Kim Kheong	Veterinary Officer
<u>畜産増殖センター</u>	
Dr. T. Supra Maniam	Director

所 属 ・ 氏 名	現 職
<u>首相府経済企画庁</u>	
Mr. Shaharuddin bin Mahd. Sam	Asst. Director, External Asst. Section
Mr. Ho Kee Chai (技術サービス課)	Deputy Director
<u>外務省アセアン事務局</u>	
Mr. Sallehuddin	Deputy Director General
Mr. Sopian bin Haji Ahmad	Principal Asst. Secretary
Mr. Hussein	Asst. Secretary
<u>公共事業省</u>	
Mr. Dzulkifli	Architect
Mr. Tony Sanphanam	Senior Technician
Miss. Laili Mazni Yahya	Quantity Surveyor
Mr. Lim Cho Boon	I P O H - State Director
Miss. Lee Bee Choo	I P O H - Senior Architect
Miss. Azizah Salim	Architect
Mr. Zakarian bin Omar	I P O H - Electricity Chief Engineer
<u>I P O H 市役所</u>	
Mr. Kong Siew Hong	Director, Engineering Department
Mr. Karthigesu	Engineer, Water Supply Department

1 - 4 協議議事錄

1) 基本設計調查時

MINUTES OF DISCUSSION ON
THE PROJECT OF THE ASEAN POULTRY DISEASE RESEARCH
AND TRAINING CENTRE

KUALA LUMPUR, MALAYSIA

6TH DECEMBER, 1985

MINUTES OF DISCUSSIONS

ON

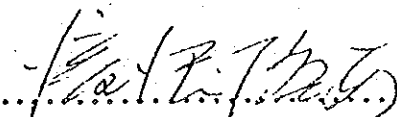
THE PROJECT OF THE ASEAN POULTRY DISEASE RESEARCH AND TRAINING CENTRE
IN
MALAYSIA

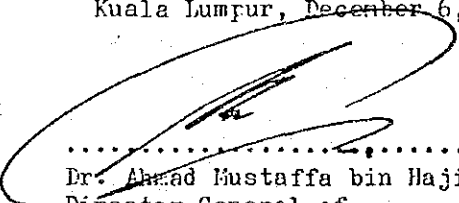
In response to the request made by the Government of Malaysia for a grant aid on the Project of The ASEAN Poultry Disease Research and Training Centre in Malaysia (hereinafter referred to as "the Project"), the Government of Japan has decided to conduct a basic design study on the Project. The Japan International Cooperation Agency which is an official agency implementing the international cooperation programmes of the Government of Japan (hereinafter referred to as "JICA") has sent a basic design study team headed by Dr. Takayasu TAKIZAWA, Director, First Research Division, National Institute of Animal Health, Ministry of Agriculture, Forestry and Fisheries, to Malaysia (hereinafter referred to as "the Study Team") from 28th November to 19th December, 1985.

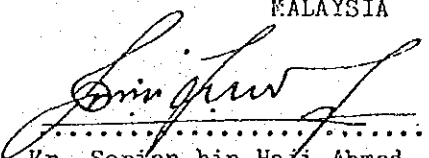
The Study Team had carried out a field survey, held a series of discussions and exchanged views with the relevant authorities of the Government of Malaysia.

Both parties have agreed to recommend to their respective Governments to examine the results of the study and discussions attached herewith towards the realization of the Project.

Kuala Lumpur, December 6, 1985.


.....
Dr. Takayasu TAKIZAWA
Leader of
The Basic Design Study Team
JICA


.....
Dr. Ahmad Mustaffa bin Haji Pabjee
Director-General of
Department of Veterinary Services
Ministry of Agriculture
MALAYSIA


.....
Mr. Soplan bin Haji Ahmad
Witness
ASEAN-Malaysia
ASEAN Secretariat
Ministry of Foreign Affairs
MALAYSIA.

ATTACHMENT

1. The objective of the Project is to establish the ASEAN Poultry Disease Research and Training Centre (hereinafter referred to as "the Centre") for the purpose of upgrading the level of research in poultry diseases, diffusing the research results and technologies to other ASEAN countries through training and thus contributing to the manpower development in poultry disease research in ASEAN.
2. The implementing agency of the Project is the Department of Veterinary Services, Ministry of Agriculture in collaboration with the Coordinating Group on Livestock of the ASEAN-COFAF.
The relationship among the agencies concerned for implementing the Project as shown in ANNEX I.
3. The proposed sites of the Centre are to be located in the campus of the Veterinary Research Institute, Ipoh, State of Perak. The site plan is attached as ANNEX II.
4. The Centre will implement research and training activities on poultry diseases.

4.1. Research activities on poultry diseases are to be carried out in the following fields:

- a) Virology
- b) Bacteriology
- c) Parasitology
- d) Pathology

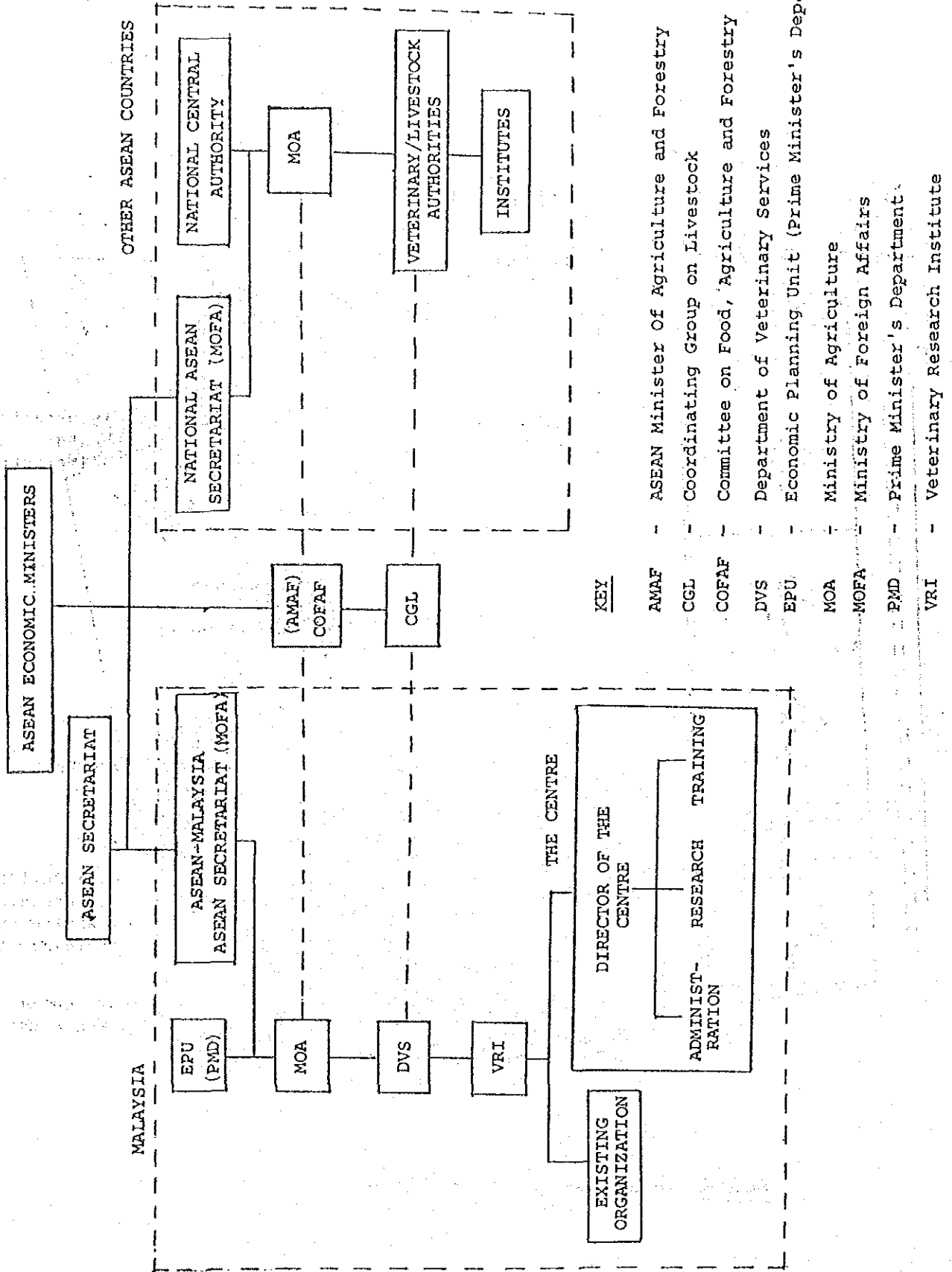
Themes of research to be studied at the first stage of the Project in each field will be as ANNEX III

4.2 Training courses to be conducted for ASEAN countries are as follows:-

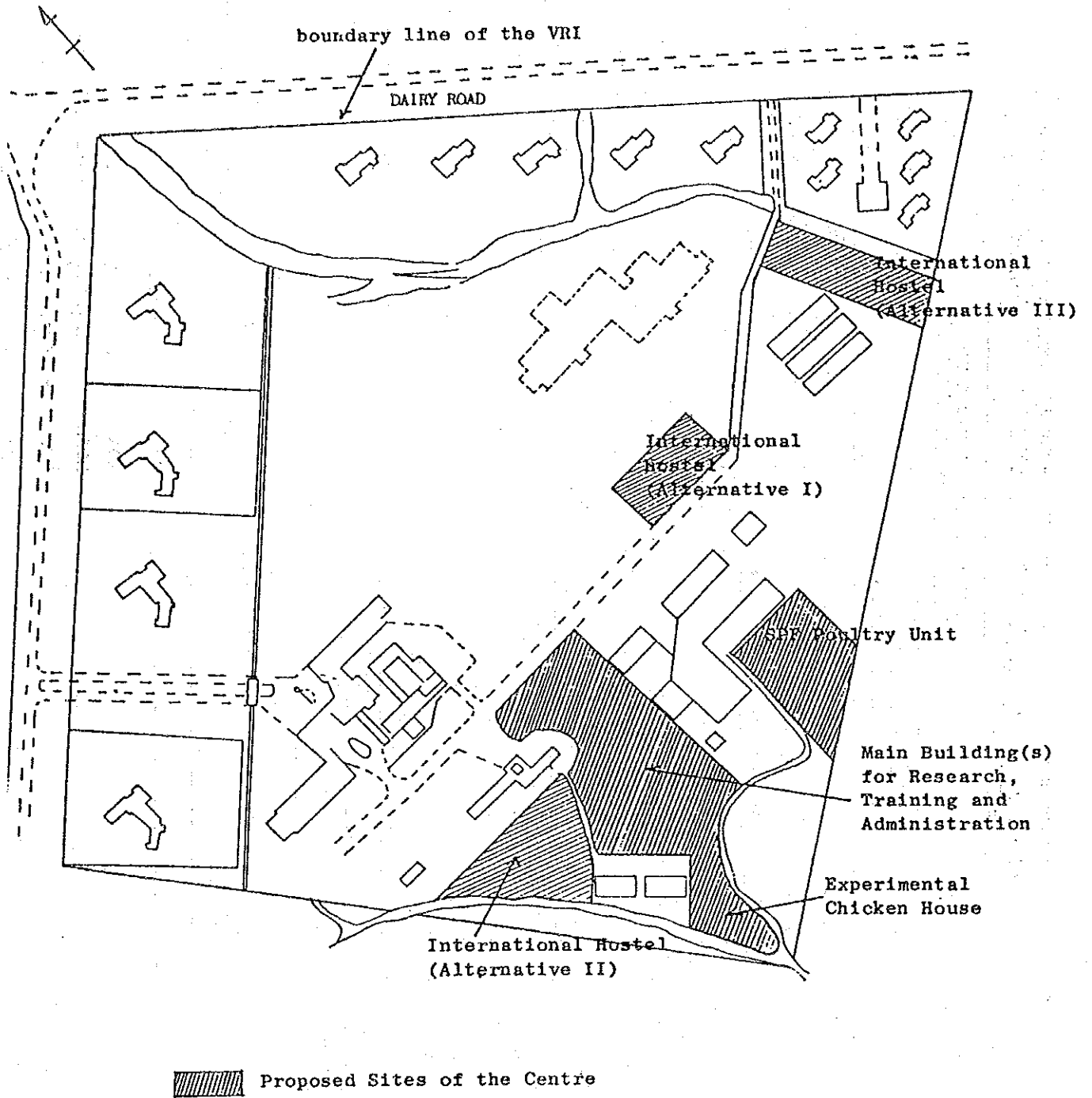
- a) ASEAN Seminar on Poultry Diseases.
 - b) ASEAN Course on Basic Diagnostic Techniques of Poultry Diseases.
 - c) ASEAN Course on Specialized Diagnostic and Research Techniques on Poultry Diseases.
5. The Study Team will convey to the Government of Japan the desire of the Government of Malaysia that the former takes necessary measures to cooperate in implementing the Project and bears the cost of the facilities and equipment requested by the latter as ANNEX IV within the scope of Japanese economic cooperation in grant form.
 6. The Government of Malaysia will take necessary measures as ANNEX V upon the execution of the grant aid to the Project by the Government of Japan.

RELATIONSHIP AMONG AGENCIES CONCERNED FOR IMPLEMENTING THE PROJECT
OF THE ASEAN POULTRY DISEASE RESEARCH AND TRAINING CENTRE

ANNEX I



SITE PLAN OF THE CENTRE



Themes of research to be studied at the first stage of the Project will be as follows:-

1. Virology

- ** Formulation of Oil Emulsion and Inactivation of Newcastle Disease Virus
- ** Development of Diagnostic Method of Avian Leukosis and Marek's Disease
- ** Technical Development of Hyperimmunization, Conjugation and Fluorescent Antibody Test
- * Serological Typing of Infectious Bronchitis Virus
- * Serological Test of Avian Influenza Virus and Paramyxoviruses
- * Methods for Differentiation of Fowl Pox Virus

2. Bacteriology

- ** Etiological Studies on Chronic Respiratory Diseases
- ** Studies on Enteritis
- ** Etiological Studies on Feed Contamination

3. Parasitology

- ** Treatment, Control and Immunological Studies on Coccidiosis
- * Vectors of Avian Diseases

4. Pathology

- ** Pathological Studies on Newcastle Disease, Avian Leukosis, Marek's Disease and Other Avian Diseases

Remarks: ** Higher priority
* Lower priority

Items requested by the Government of Malaysia are as follows:-

1. Facilities

1.1 Main building(s) for research, training and administration

- a) Virology research laboratory
- b) Bacteriology research laboratory
- c) Parasitology research laboratory
- d) Pathology research laboratory
- e) Common equipment and apparatus rooms
- f) Washing and sterilizing room
- g) Electron Microscope room
- h) Data processing room
- i) Lecture room
- j) Training room
- k) Poultry inspection room
- l) Administration office
- m) Conference room
- n) Other necessary facilities

1.2 Experimental chicken house

1.3 Specific pathogen free (SPF) poultry unit

1.4 International hostel inclusive of apartments for visiting ASEAN scientists

2. Equipment

2.1 Equipment for research

- a) Tissue culture equipment
- b) Fluorescent antibody test equipment
- c) ELISA System
- d) Equipment for preparation of media
- e) Microscope and accessories
- f) Fractionating columns
- g) Laminar flow
- h) Insectarium
- i) Autopsy equipment

- j) Cryostat
- k) Equipment for staining procedures
- l) Equipment for pathological inspection
- m) Refrigerator/freezer/ultra deep freezer
- n) Centrifuge
- o) Liquid nitrogen container
- p) Freeze drying apparatus
- q) Constant temperature incubator
- r) Washing and sterilizing equipment
- s) Electron Microscope and accessories
- t) Data processing equipment
- u) Other necessary equipment

2.2 Equipment for Training

- a) Microscopé, discussion microscope and accessories
- b) Centrifuge
- c) Refrigerator
- d) CO₂ incubator
- e) Egg incubator
- f) Incubator for bacteria culture
- g) Audio-visual education aid
- h) Other necessary equipment

Major undertakings to be carried out by the Government of Malaysia

1. To clear, level and reclaim the sites when needed.
2. To construct the gate fence in and around the sites when needed.
3. To move the existing goat shed.
4. To construct the necessary roads leading to the sites.
5. To provide facilities for electricity, water supply, drainage and others.

5.1 Electricity

The distributing line to the sites.

5.2 Water supply

The city water distribution main to the sites.

5.3 Drainage

The drainage city main (for storm, sewer and others) to the sites.

5.4 Gas supply

The gas cylinders for LPG.

5.5 Telephone system

The telephone trunk line to the main distribution panel of the buildings.

5.6 Furnitures and equipment

General furnitures (carpet, curtain, table, chair and others)

6. To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement

6.1 Advising commission of Authorization to Pay

6.2 Payment commission

7. To ensure unloading, customs clearance and tax exemption of materials and equipment related to the Project at the port of disembarkation in Malaysia.
8. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Malaysia and stay therein for the performance of their work.
9. To maintain and use properly and effectively that facilities constructed and equipment purchased under the grant aid.
10. To bear all the expenses other than those to be borne by the grant aid, necessary for construction of the facilities as well as for the transportation and the installation of the equipment.

2) ドラフトファイナルレポート現地説明時

**MINUTES OF DISCUSSION ON
THE PROJECT OF THE ASEAN POULTRY DISEASE
RESEARCH AND TRAINING CENTRE**

KUALA LUMPUR, MALAYSIA

3RD. APRIL, 1986

MINUTES OF DISCUSSIONS

ON

THE PROJECT OF THE ASEAN POULTRY DISEASE RESEARCH AND TRAINING CENTRE

IN

MALAYSIA

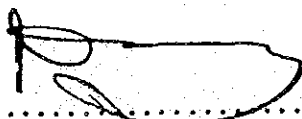
In response to the request made by the Government of Malaysia for a grant aid for the Project of the ASEAN Poultry Disease Research and Training Centre in Malaysia (hereinafter referred to as "the Project"), the Government of Japan decided to conduct a basic design study on the Project and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Malaysia the team headed by Dr. Takayasu TAKIZAWA, Director, First Research Division, National Institute of Animal Health, Ministry of Agriculture, Forestry and Fisheries, from 28th November to 19th December, 1985.

As a result of the study, JICA prepared a Draft Report and despatched a team headed by Dr. Hitoshi KAWAMURA, Chief of Second Virology Laboratory, Second Research Division, National Institute of Animal Health, Ministry of Agriculture, Forestry and Fisheries to explain and discuss it with the relevant authorities of the Government of Malaysia from 27th March to 4th April, 1986.

Both parties had a series of discussions on the Report and agreed to recommend to their respective Governments that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

3rd April, 1986.

.....
111 抄 育
Dr. Hitoshi KAWAMURA
Leader of
The Basic Design Study Team
JICA

.....

Dr. Nik Mahmood bin Nik Mohamed
Deputy Director-General of
Department of Veterinary Services
Ministry of Agriculture
MALAYSIA

ATTACHMENT

1. The Malaysian side agreed in principle to the basic design in the Draft Final Report and appropriate amendments as shown in ANNEX I will be incorporated in the Final Report.

2. The Government of Malaysia will take necessary measures inclusive of preparation of budget for development and operating cost upon the execution of the grant aid to the Project by the Government of Japan.

3. The Final Report (17 copies in English) will be submitted to the Government of Malaysia in May 1986.

ANNEX I

1. The layout and siting of International Hostel shall be reconsidered in relation to the existing chicken house.
2. The auxiliary power source shall be considered for the Ultra Deep Freezer.
3. The telephone and inter-communication system shall be installed as follows:

Research and Training Building 22

International Hostel 30

Twenty nine of 30 are available only
for inter-communication system

SPF Poultry Unit 8

Seven of 8 are available only for
inter-communication system

Experimental Chicken House 8

Seven of 8 are available only for
inter-communication system.

4. Other appropriate amendments shall be incorporated in the Final Report.

2. 類似施設概要

2-1 MARDI

(Malaysia Agriculture Research Development Institute)

クアラルンプールの南約40#の所にあり、マレイシア農科大学に隣接している。総合農業試験場の形態をなし、畜産部門においては豚及び家禽（褐色卵鶏、ブロイラー、アヒル）の環境及び飼料を主体とした飼育試験を行ない、その研究成果を農家に持ち込み技術指導を行なっている。鶏舎は育すう舎1、成鶏舎3で、採卵鶏はケージ、ブロイラーは平飼いであった。採卵鶏の平均産卵率70～80%、初産日令150日、ブロイラーは56日令出荷、体重2.3#、飼料効率2.3～2.5である。

2-2 Poultry Multiplication Center

(Bukit Tengah Provincial Wellesly)

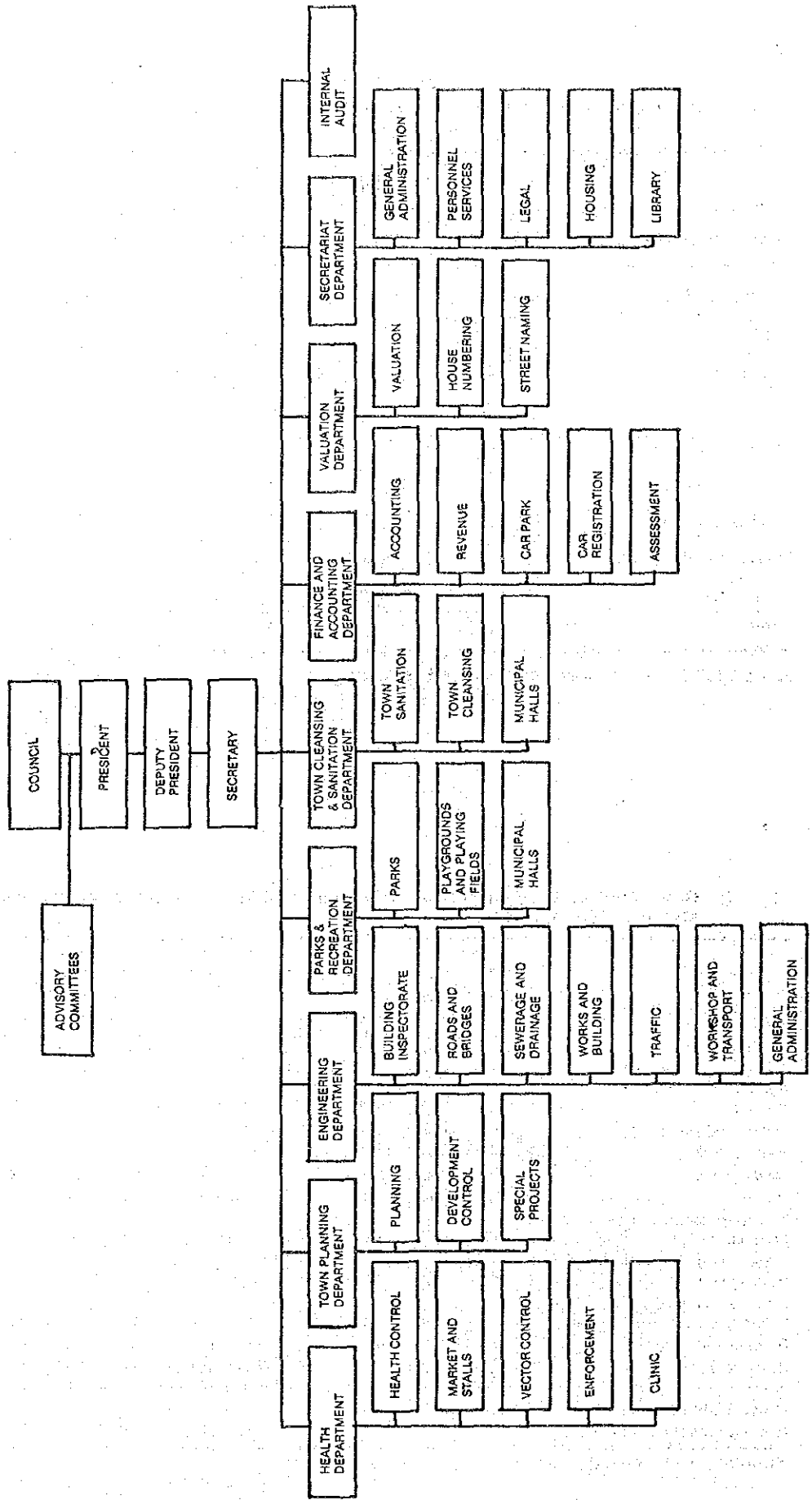
マレイシア北部の都市Butterworthの均衡にあり、養鶏技術者の訓練、エクステンションサービス、良品質のひなの供給を主たる目的とした養鶏試験場である。旧鶏舎群（4棟、各棟2,000羽）、新鶏舎群4棟（各棟2,100羽）あり、鶏舎間隔も十分にとれており、1棟毎にall in all out式をとっている。ひなの生産羽数は1,200,000羽/年。種卵の採取から貯卵、ふ化、ひなの発送等、衛生重点主義に行なわれ、我国の種畜牧場にも劣らぬ施設管理がみられた。一部に白色レグホーンを飼育しているが、これは英国のRoss系のもので、これからとった種卵は発育鶏卵（5～6日ふ化令）としてVRIに、時に初生ひなとして（所謂MDFとして）おくられている。別にうずら800羽が飼育（ケージ）されていた。

2-3 MDV (Veterinary Diagnostic Laboratory)

Poultry Multiplication Centerの1隅にあり、事務室棟と試験室棟の2棟あり、獣医師は3人である。ウイルス、細菌、寄生虫、病理の4部門に分かれているが仕事はないようにもみられた。業務は病性鑑定が主であり、マレイシア北部を管轄し、対象家畜は、牛、豚、家禽、競争馬及び犬猫である。ここで診断できないものはVRIに送られる。

3. 參考資料 (source : Ipon Structural Plan)

3 - 1 Overall Functional Chart Of Majlis Perbandaran Ipoh



3 - 2 Population Growth By District, 1980-2000.

Administrative District	Population					Rate Of Growth
	1980	1985	1990	1995	2000	
Batang Padang	136,586	144 980	153 890	163 348	173 386	1.2
Dinding	146 049	155 792	166 185	177 272	189 098	1.3
Hilir Perak	205 819	219 550	234 196	249 820	266 486	1.3
Kinta	573 530	623 966	678 837	738 534	803 480	1.7
Krian	157 649	160 028	162 443	164 894	167 382	0.3
Kuala Kangsar	144 488	145 939	147 404	148 884	150 379	0.2
Larut & Matang	253 707	271 971	291 549	312 537	335 036	1.4
Perak Tengah	74 067	77 460	81 010	84 721	88 603	0.9
Hulu Perak	70 383	74 709	79 299	84 174	89 347	1.2
Total:	1 762 278	1 874 395	1 994 813	2 124 184	2 263 197	1.2

Source: ISPU - Technical Report 'Regional Population'

3 - 3 Gross Product And Annual Real Growth Rates Of Ten Component Sectors In Perak And Peninsular Malaysia, 1970 And 1980.

	Perak					Peninsular Malaysia				
	Gross State Product (million \$)		Growth Rate (%)	Rank of Growth Rate	Trend	Gross Domestic Product (million \$)		Growth Rate (%)	Rank of Growth Rate	Trend
	1970	1980				1970	1980			
Agriculture, Forestry and Fishing	486	682	3.45	7	Increasing	2 708	4 485	5.17	8	Increasing
Mining and Quarrying	302	280	-0.75	9	Decreasing	581	653	1.18	9	Increasing
Manufacturing	142	511	13.66	2	Increasing	1 207	5 159	15.63	1	Increasing
Construction	40	102	9.81	3	Increasing	387	961	9.52	5	Increasing
Utilities	59	80	3.09	8	Increasing	224	539	9.18	6	Increasing
Transport, storage and Communication	66	135	7.42	5	Increasing	514	1 499	11.30	3	Increasing
Wholesale and Retail Trade, Hotels and Restaurants	188	370	7.01	6	Increasing	1 228	2 916	9.03	7	Increasing
Finance, Insurance, Real Estate and Business Services	114	265	8.80	4	Increasing	712	1 907	10.35	4	Increasing
Government services	83	380	16.43	1	Increasing	709	2 990	15.48	2	Increasing
Other services	118	77	-4.18	10	Decreasing	711	597	-1.73	10	Decreasing
Gross State Product	1 598	2 882	6.07							
Gross Domestic Product					Increasing	8 981	21 706	9.22		Increasing

Source: Fourth Malaysia Plan.

3 - 4 Meteorological Data at IPOH

(source : Malaysian Meteorological Service)

TEMPERATURE (°C)

Year : 1983

Hour Month	Mean Hourly																								Mean Daily	Mean Max.	Mean Min.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
January	24.7	24.3	24.0	23.6	23.4	23.1	23.0	24.4	26.6	28.4	30.4	31.7	32.4	32.5	32.6	32.0	30.8	29.1	27.7	26.9	26.4	26.0	25.6	25.1	27.3	33.5	22.7
February	25.6	25.3	24.9	24.5	24.3	24.0	23.9	25.1	27.5	29.5	31.4	32.9	33.8	34.3	34.3	33.1	31.1	29.7	28.1	27.3	26.8	26.4	26.2	26.0	28.2	35.1	23.7
March	25.7	25.5	25.3	25.0	24.8	24.5	24.5	25.9	27.8	29.8	31.5	32.9	33.8	34.0	33.5	32.7	30.7	29.1	27.7	27.2	26.9	26.7	26.4	26.1	28.3	34.8	24.3
April	26.4	26.1	25.9	25.6	25.4	25.2	25.2	26.5	28.5	30.3	32.1	33.3	33.9	34.4	34.0	33.0	31.2	29.5	28.6	27.9	27.4	27.2	26.9	26.6	28.8	34.8	24.9
May	25.9	25.7	25.5	25.3	25.1	24.9	25.0	26.4	28.2	29.9	31.5	32.5	32.9	32.7	31.7	31.2	30.5	29.3	28.2	27.6	27.2	26.9	26.6	26.3	28.2	33.8	24.5
June	25.7	25.4	25.1	24.8	24.6	24.5	24.6	26.0	27.9	29.9	31.4	32.3	33.0	33.3	33.1	32.3	30.9	29.1	28.0	27.4	27.0	26.6	26.3	25.9	28.1	33.9	24.1
July	25.1	24.8	24.5	24.3	24.1	24.0	24.2	25.5	27.3	29.0	30.7	31.8	32.6	32.5	32.2	31.5	30.5	29.2	27.9	27.1	26.6	26.2	25.8	25.5	27.6	33.5	23.8
August	24.9	24.7	24.4	24.2	24.1	23.9	24.0	25.3	27.1	28.7	30.1	30.9	31.6	31.6	31.6	31.1	29.9	28.5	27.3	26.5	26.0	25.7	25.3	25.1	27.2	32.9	23.7
September	24.4	24.1	23.9	23.8	23.6	23.5	23.5	24.9	26.5	28.2	29.8	31.1	31.5	31.3	30.8	29.6	28.9	27.8	26.7	26.0	25.5	25.2	24.8	24.5	26.7	32.3	23.1
October	24.7	24.5	24.2	24.0	23.8	23.7	23.9	25.3	27.3	29.1	30.6	31.7	32.1	31.4	30.8	30.0	29.1	27.9	26.9	26.4	26.0	25.6	25.3	25.0	27.1	32.8	23.5
November	24.5	24.3	24.1	23.9	23.7	23.6	23.7	25.2	27.2	29.2	30.6	31.6	32.1	31.9	31.3	30.7	29.1	27.7	26.8	26.0	25.5	25.2	24.9	24.6	27.0	32.8	23.4
December	24.0	23.8	23.6	23.4	23.2	23.1	23.1	24.1	25.5	27.1	28.4	29.7	30.3	30.7	30.2	28.7	27.4	26.2	25.6	25.1	24.9	24.6	24.4	24.2	25.9	31.2	22.9
Mean	25.1	24.9	24.6	24.4	24.2	24.0	24.1	25.4	27.3	29.1	30.7	31.9	32.5	32.5	32.2	31.3	30.0	28.6	27.5	26.8	26.3	26.0	25.7	25.4	27.5	33.5	23.7

RELATIVE HUMIDITY (%)

Hour Month	Mean Hourly																								Mean Daily	Mean Max.	Mean Min.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
January	91	91	91	91	90	90	91	85	73	68	61	56	53	54	54	57	63	72	80	84	87	89	90	91	77	95	50
February	90	90	91	91	91	92	92	85	73	67	60	54	51	49	50	56	66	72	79	83	86	88	89	90	77	94	48
March	91	92	92	93	93	94	93	87	77	70	63	59	56	55	57	61	69	77	83	85	87	89	90	90	79	95	52
April	90	90	91	91	92	92	91	86	77	71	63	60	57	56	57	62	69	76	80	83	86	88	89	90	79	94	55
May	93	93	93	94	94	94	94	87	79	72	67	62	61	61	65	68	71	78	83	86	87	90	91	92	81	95	57
June	90	90	91	91	92	92	92	86	78	70	63	59	56	55	56	61	67	75	81	84	86	88	89	90	79	94	53
July	91	91	92	92	93	93	93	86	78	71	64	59	56	56	58	61	65	71	79	83	85	88	89	90	79	95	53
August	93	93	94	94	95	94	94	88	80	73	68	64	61	61	61	64	70	77	83	86	89	90	91	92	81	96	57
September	93	94	94	94	94	95	95	89	81	73	67	63	60	62	65	70	74	78	84	88	90	91	92	93	82	96	57
October	93	93	94	95	95	95	95	89	80	73	67	62	60	64	67	70	74	80	85	88	90	91	92	93	83	96	57
November	92	92	92	92	93	93	92	87	78	71	63	60	58	60	63	64	71	78	83	87	88	89	91	92	80	95	55
December	95	94	95	95	95	95	95	91	84	77	72	68	66	64	66	74	80	86	90	91	92	94	94	94	85	97	62
Mean	92	92	93	93	93	93	93	87	78	71	65	61	58	58	60	64	70	77	83	86	88	89	91	91	80	95	55

Year : 1983

CLIMATOLOGICAL SUMMARY

Month	Mean M.S.L. Pressure at 0700 ST (mb.)	Absolute Extreme			Mean Amount of Cloud (oktas) (0-8)			Rainfall (mm.)			Number of Days													Mean Daily Evaporation (mm.)				
		Temperature (°C)		Relative Humidity (%)	0700 ST	1300 ST	1900 ST	Total	Highest in a day	Date	Air Temperature (°C)					Rainfall (mm.)				Wind Force		Hall	Thunder		Fog	Overcast	Blue Sky	
		High-est Max.	Low-est Min.								Max. >= 34.5	Max. <= 34.4	Max. <= 28.4	Min. <= 21.5	Min. >= 21.6	R >= 0.1	R >= 12.5	R >= 25.0	R >= 50.0	F >= 6	F >= 8							
		Low-est	High-est	Max. <= 28.5	Min. <= 21.5	Min. >= 21.6	R >= 0.1	R >= 12.5	R >= 25.0	R >= 50.0	F >= 6	F >= 8	Hall	Thunder	Fog	Overcast	Blue Sky											
January	1012.9	35.8	21.0	38	6	6	6	52.0	38.7	26	7	24	..	2	29	6	1	1	..	3	..	..	5	..	16	..	4.5
February	12.2	36.1	21.9	31	6	5	6	105.0	28.5	14	22	6	..	..	28	10	3	1	..	11	..	..	13	..	11	..	5.3
March	11.8	35.9	22.0	35	6	6	7	163.5	33.7	28	24	7	..	..	31	15	5	2	..	12	..	..	16	..	26	..	5.3
April	10.3	36.1	23.2	43	7	7	7	184.0	53.8	28	23	7	..	..	30	8	5	4	1	5	1	..	12	..	27	..	4.9
May	10.1	35.5	22.7	45	7	7	7	93.8	23.9	2	10	21	..	..	31	19	3	..	..	7	..	..	22	..	27	..	4.3
June	10.3	35.7	22.5	42	7	6	7	186.9	89.0	11	7	23	..	..	30	11	3	3	1	12	..	..	18	..	27	..	4.7
July	10.4	35.1	22.4	41	7	6	7	81.4	28.9	20	6	25	..	..	31	12	3	1	..	15	..	..	14	..	24	..	4.3
August	10.6	35.2	22.3	44	7	7	7	260.0	41.7	26	2	29	..	..	31	21	8	6	..	12	1	..	17	..	30	..	4.3
September	11.4	34.4	21.5	46	7	7	7	389.3	87.5	14	..	30	..	1	29	21	12	7	1	12	2	..	18	..	30	..	4.3	
October	10.9	34.5	22.3	46	7	7	7	203.5	24.1	7	2	29	..	..	31	19	10	..	..	14	2	..	15	..	31	..	4.3
November	12.3	34.6	22.1	43	7	6	7	128.3	35.8	27	2	28	..	..	30	15	4	1	..	11	1	..	12	..	25	..	4.1
December	11.7	34.8	21.3	42	7	7	7	259.8	84.4	17	1	25	5	2	29	22	5	3	1	6	..	..	11	..	27	..	3.2
Total	..	..	..	..	..	..	..	2107.5	..	..	106	254	5	5	360	179	62	29	4	120	7	..	173	..	301	..	..
Mean or Extreme	1011.3	36.1	21.0	31	7	6	7	..	89.0	4.5

† The mean amount of cloud at hours of observation on a day of blue sky < 3 oktas; on an overcast day > 6 oktas.
 F >= 6 Beaufort force greater than 10.7 m/s.
 F >= 8 Beaufort force greater than 17.1 m/s.

SURFACE WIND

Month	Percentage Frequency and Mean Velocity of Winds from The Various Directions																	Distribution of Wind								
	N		NE		E		SE		S		SW		W		NW		Calm	>10.7 m/s	5.5-10.7 m/s	1.6-5.4 m/s	0-1.5 m/s	Defective Record				
	%	m/s	%	m/s	%	m/s	%	m/s	%	m/s	%	m/s	%	m/s	%	m/s	%	hr.	hr.	hr.	hr.	hr.				
January	4.2	2.0	36.7	2.0	12.4	1.1	1.5	1.3	20.1	2.5	9.7	3.0	1.5	1.6	0.9	2.1	13.1	..	5	391	346	2				
February	1.3	1.9	31.4	1.6	8.6	0.9	1.9	1.7	18.9	2.7	18.1	3.6	1.2	2.6	0.7	1.3	17.7	..	28	291	353	..				
March	2.5	1.6	36.5	1.5	10.5	0.9	2.7	1.9	21.0	2.7	11.5	3.3	0.8	1.9	0.5	1.7	13.8	..	15	317	412	..				
April	1.7	1.8	30.7	1.4	6.8	1.0	1.7	1.5	24.0	2.7	11.1	3.1	0.7	1.6	1.0	1.0	22.4	..	10	291	419	..				
May	2.0	1.4	31.9	1.4	7.5	0.8	1.6	1.7	18.8	2.1	15.5	2.3	1.6	1.9	0.9	1.1	20.2	..	5	267	472	..				
June	2.4	1.9	27.4	1.5	14.3	0.9	1.7	1.3	12.1	2.5	21.5	3.3	0.8	3.1	0.5	1.5	19.2	..	21	284	414	1				
July	4.8	2.2	29.0	1.6	14.1	1.1	2.0	2.2	14.7	3.0	16.0	3.4	1.6	3.3	1.9	1.5	15.9	..	32	303	409	..				
August	2.4	1.7	31.7	1.7	13.8	0.9	1.7	1.7	15.3	2.3	16.0	2.9	1.5	2.6	0.4	2.2	17.1	..	14	314	416	..				
September	4.3	1.9	39.0	1.6	11.1	1.0	2.2	1.7	13.6	2.7	14.5	3.1	1.0	1.4	0.4	3.3	13.8	..	22	290	406	2				
October	2.4	1.6	31.5	1.7	12.5	0.9	1.7	2.1	14.7	2.4	15.9	3.3	1.9	1.8	0.9	1.7	18.5	..	19	308	417	..				
November	8.1	2.9	38.7	2.2	12.7	0.9	2.8	1.4	8.5	2.7	10.9	3.2	0.8	2.9	2.1	3.5	15.5	..	22	337	359	2				
December	13.4	1.6	35.5	1.9	3.1	0.8	4.8	1.8	13.2	2.3	3.5	2.3	2.1	2.2	1.2	2.1	23.1	..	8	274	462	..				
Mean	4.1	1.9	33.3	1.7	10.6	0.9	2.2	1.7	16.2	2.5	13.7	3.1	1.3	2.2	0.9	1.9	17.5

SUNSHINE DURATION (Hour)

Year : 1983

Hour Month	Mean Hourly													Mean Daily	M.S.D. A.S.D. (%)	Number of Days				
	05.30 to 06.30	06.30 to 07.30	07.30 to 08.30	08.30 to 09.30	09.30 to 10.30	10.30 to 11.30	11.30 to 12.30	12.30 to 13.30	13.30 to 14.30	14.30 to 15.30	15.30 to 16.30	16.30 to 17.30	17.30 to 18.30			0 hr.	0.1 to 3.0 hrs.	3.1 to 6.0 hrs.	6.1 to 9.0 hrs.	>9.0 hrs.
January	0.00	0.55	0.85	0.90	0.95	0.90	0.80	0.65	0.60	0.50	0.40	0.10	0.00	7.15	60	0	2	6	13	10
February	0.00	0.55	0.90	0.95	0.95	0.95	0.95	0.95	0.85	0.70	0.55	0.30	0.00	8.65	73	0	0	1	14	13
March	0.00	0.35	0.80	0.90	0.95	0.95	1.00	0.90	0.75	0.65	0.45	0.05	0.00	7.80	65	0	0	4	17	10
April	0.00	0.10	0.60	0.90	0.95	0.95	0.90	0.95	0.75	0.50	0.20	0.00	0.00	6.80	56	0	0	9	19	2
May	0.00	0.40	0.65	0.80	0.90	0.85	0.85	0.70	0.55	0.40	0.35	0.20	0.00	6.65	54	0	4	7	17	3
June	0.05	0.35	0.60	0.80	0.85	0.90	0.85	0.90	0.75	0.55	0.35	0.10	0.00	7.05	57	0	0	9	19	2
July	0.05	0.40	0.55	0.70	0.85	0.90	0.90	0.80	0.60	0.40	0.40	0.20	0.00	6.75	55	1	1	6	20	3
August	0.00	0.30	0.45	0.65	0.65	0.60	0.60	0.70	0.50	0.40	0.25	0.15	0.00	5.25	43	0	8	9	13	1
September	0.00	0.30	0.55	0.55	0.70	0.75	0.65	0.65	0.60	0.40	0.30	0.10	0.00	5.65	47	0	3	10	16	1
October	0.00	0.20	0.55	0.70	0.80	0.80	0.80	0.65	0.55	0.40	0.30	0.10	0.00	5.85	49	0	4	10	17	0
November	0.00	0.15	0.50	0.75	0.80	0.80	0.75	0.70	0.55	0.55	0.35	0.15	0.00	6.15	52	0	4	8	16	2
December	0.00	0.10	0.30	0.40	0.55	0.50	0.50	0.45	0.35	0.30	0.15	0.05	0.00	3.65	31	4	12	7	6	2
Total	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	38	86	187	49
Mean	0.00	0.30	0.60	0.75	0.80	0.80	0.80	0.75	0.60	0.45	0.35	0.10	0.00	6.45	53	..	..	..	..	..

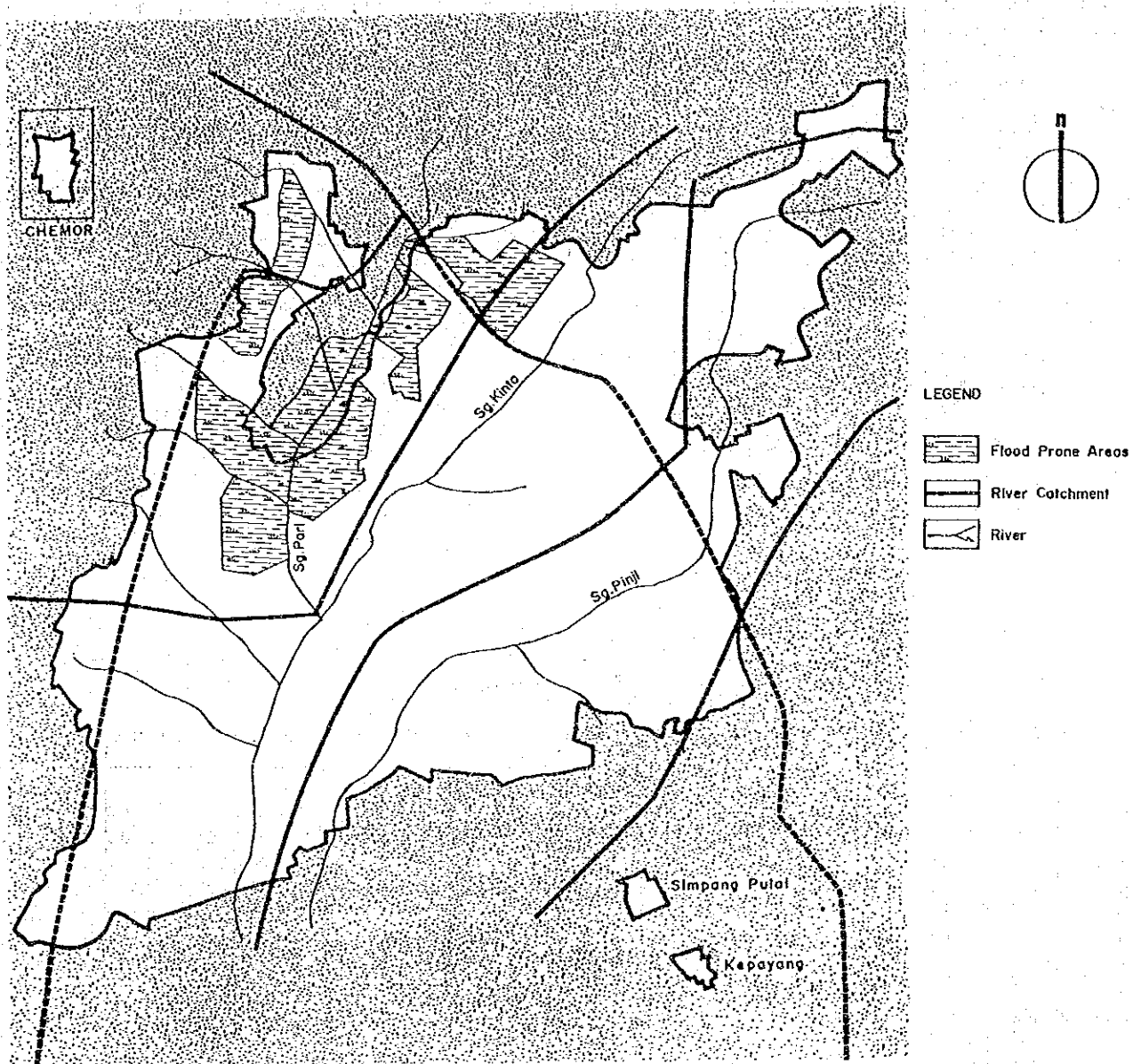
M.S.D. = Mean Sunshine Duration.
A.S.D. = Astronomical Sunshine Duration.

RAINFALL AMOUNT (mm.)

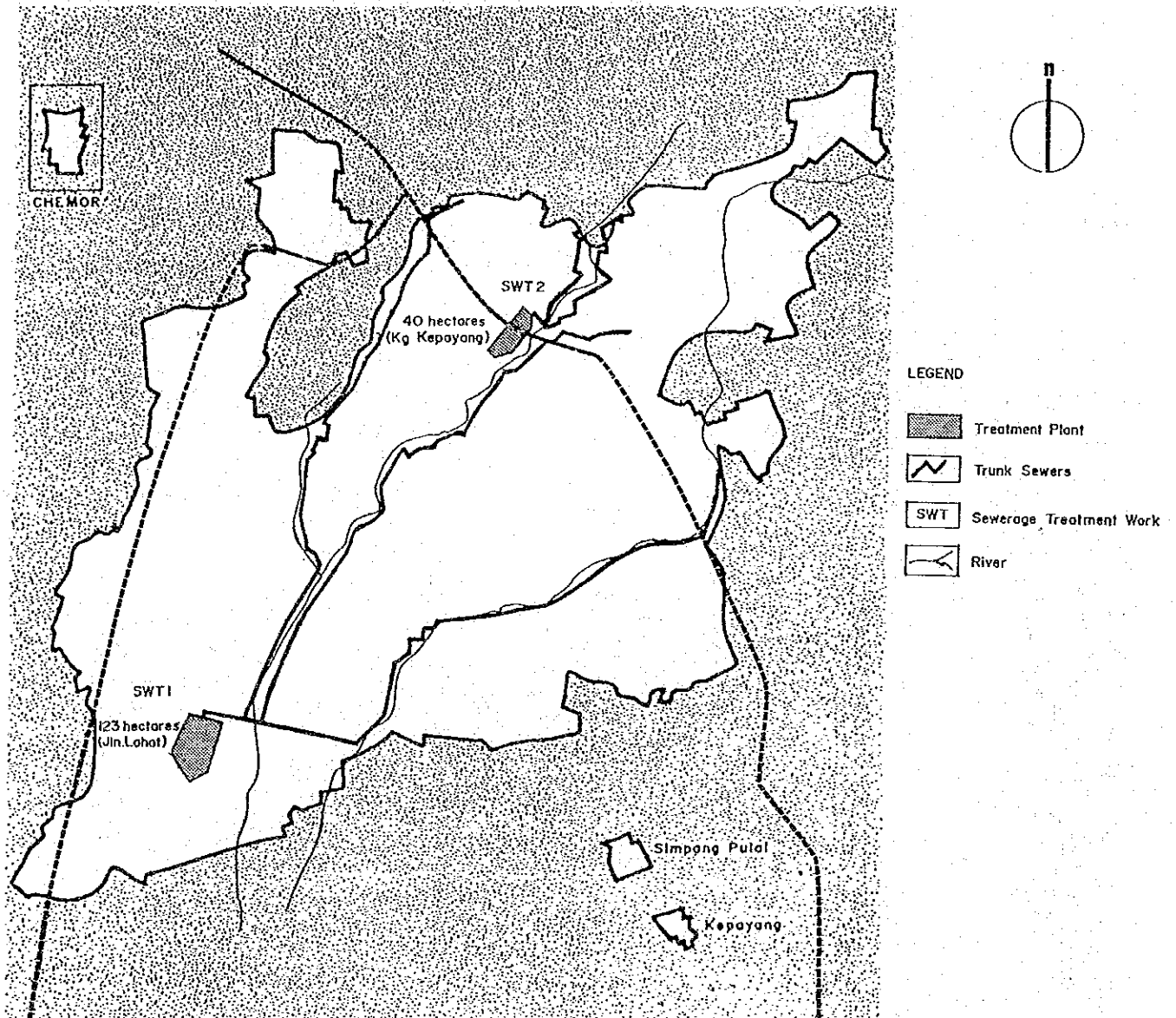
Hour Month	Hourly Total																				Monthly Total				
	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20		20-21	21-22	22-23	23-24
January	0.1	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.2	0.0	9.0	27.4	5.9	1.0	1.1	0.0	0.0	0.3	52.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	43.3	13.7	30.0	5.9	2.2	0.0	0.0	0.0	103.0
March	0.6	1.7	0.0	0.0	1.3	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.3	19.7	0.8	30.4	61.2	25.7	2.6	0.6	0.0	0.0	0.5	165.5
April	0.6	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.7	49.9	55.7	11.7	0.0	12.3	17.5	0.3	1.5	2.8	95.3	
May	6.0	2.1	1.4	1.1	0.1	1.2	1.7	21.2	0.9	1.2	0.0	0.0	7.2	1.1	3.8	18.9	1.5	0.1	17.3	0.0	0.1	1.5	4.1	2.8	95.3
June	4.6	0.4	0.1	0.0	0.1	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.0	23.7	54.6	59.1	10.9	11.2	4.9	5.2	5.5	186.9	
July	1.0	1.0	1.3	0.1	0.5	0.2	5.2	2.1	5.2	17.0	1.5	0.1	0.3	0.1	0.0	10.9	1.7	5.2	8.7	3.4	2.0	4.2	6.8	2.9	81.4
August	0.2	1.0	2.4	0.1	1.6	3.1	1.2	0.3	1.4	0.1	0.2	0.8	18.7	25.5	2.3	12.4	19.9	42.4	84.1	10.8	13.9	2.8	5.8	9.0	260.0
September	0.9	6.3	32.8	17.1	2.9	27.0	14.4	5.0	5.3	2.1	0.0	0.0	9.2	68.2	56.0	15.6	9.5	23.9	41.4	26.9	18.1	4.7	2.0	389.3	
October	0.0	0.0	0.0	0.0	16.1	11.1	1.5	0.8	2.6	0.0	0.0	2.6	0.0	63.6	22.3	21.6	6.6	2.2	14.6	20.9	6.9	7.2	2.2	0.7	203.5
November	0.3	0.4	0.2	1.3	0.1	0.0	0.3	0.5	0.0	0.0	0.0	0.0	1.3	1.0	18.1	0.5	14.3	25.7	4.7	10.9	33.5	7.2	4.0	4.0	128.3
December	25.1	2.4	2.4	2.9	3.2	1.1	1.0	2.1	1.9	2.5	2.4	2.0	1.6	0.8	1.7	61.1	48.2	59.5	16.3	5.4	0.5	0.7	3.9	11.1	259.8
Total	39.4	16.2	40.8	22.6	25.9	46.8	29.7	32.0	17.3	22.9	4.1	5.5	29.1	124.8	137.5	223.8	264.1	357.2	302.0	113.2	111.2	64.1	37.0	40.3	2107.5

3-5 Conditions of Infra-structure

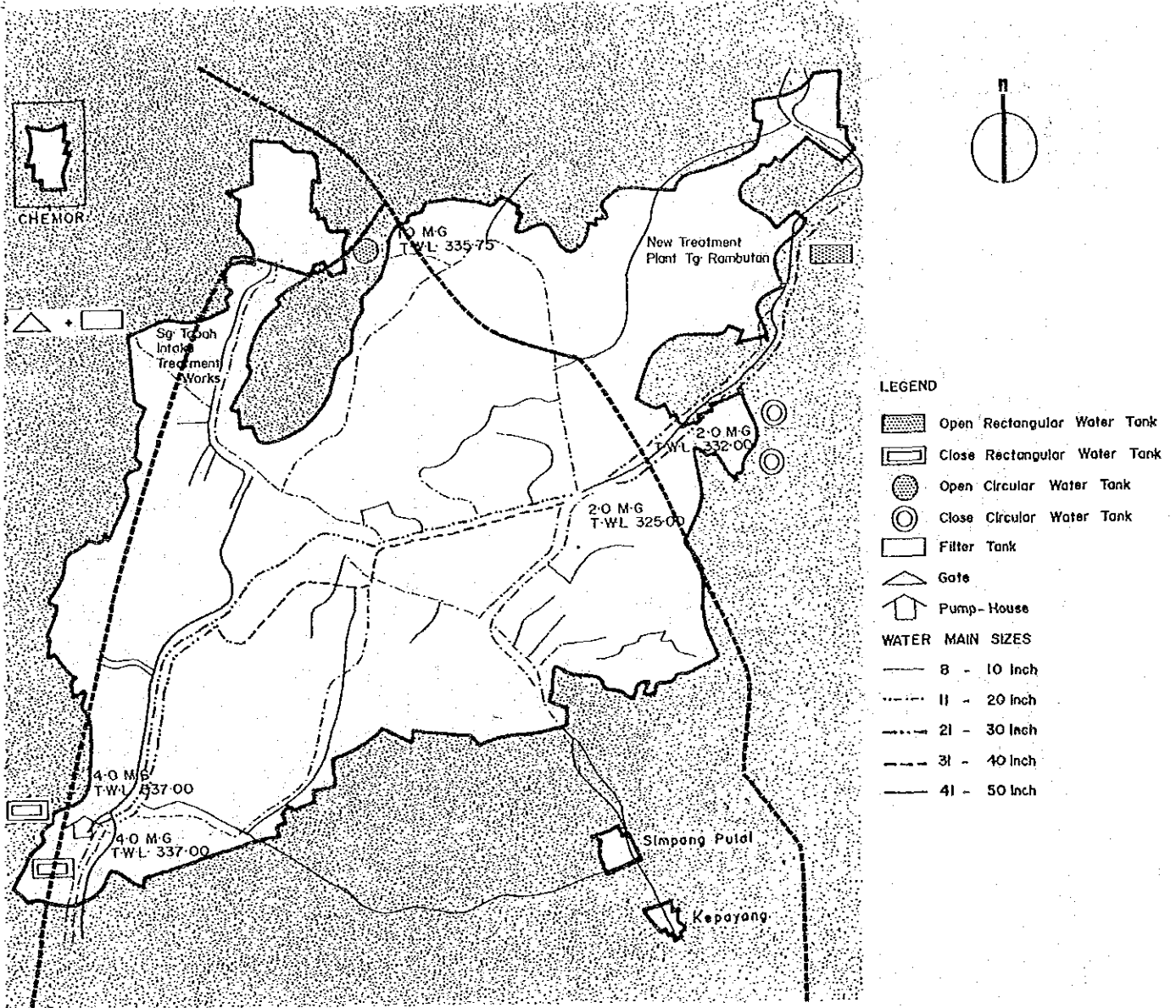
3-5-1 Drainage System And Flood Prone Areas.



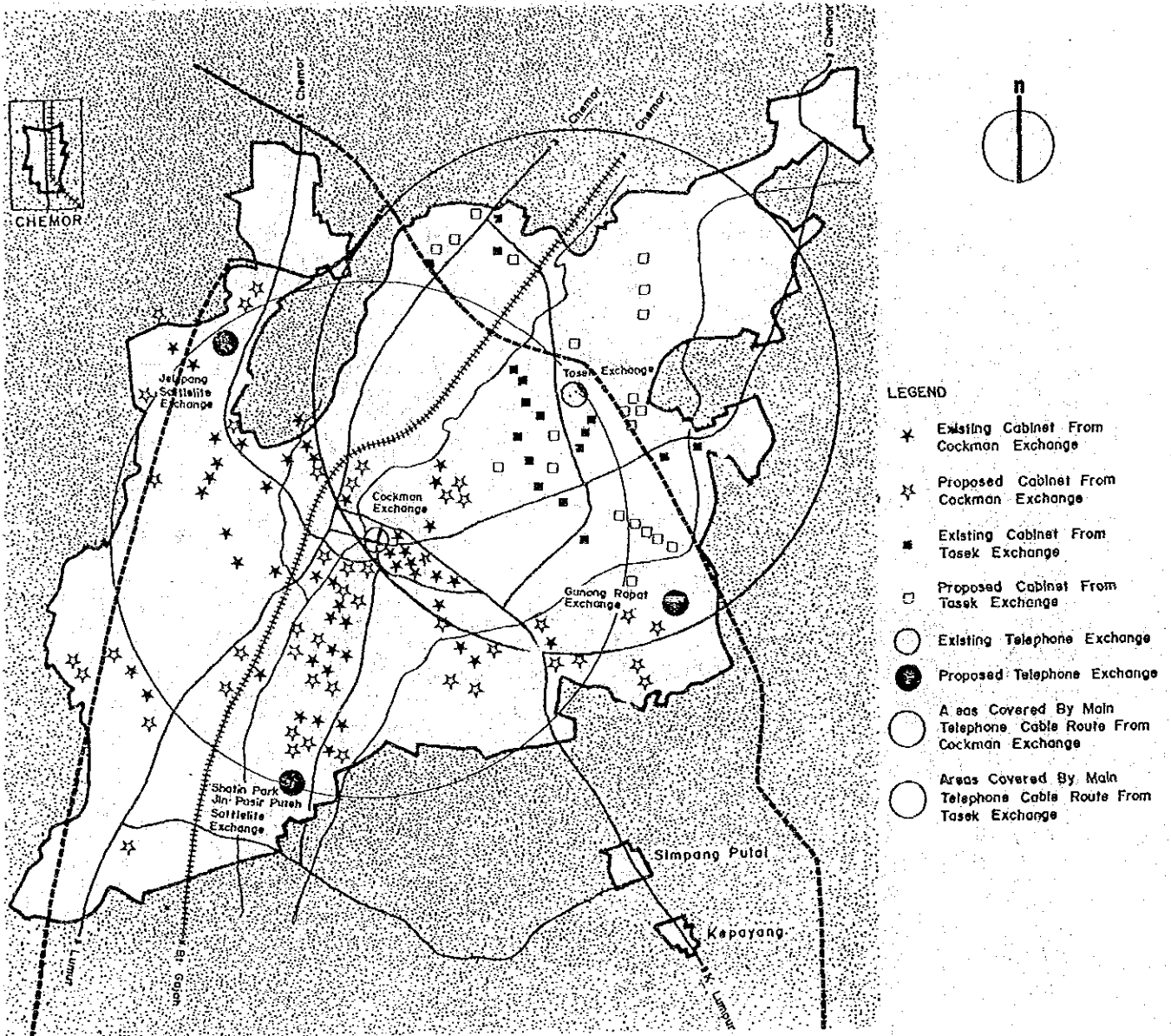
3 - 5 - 2 Sewerage System



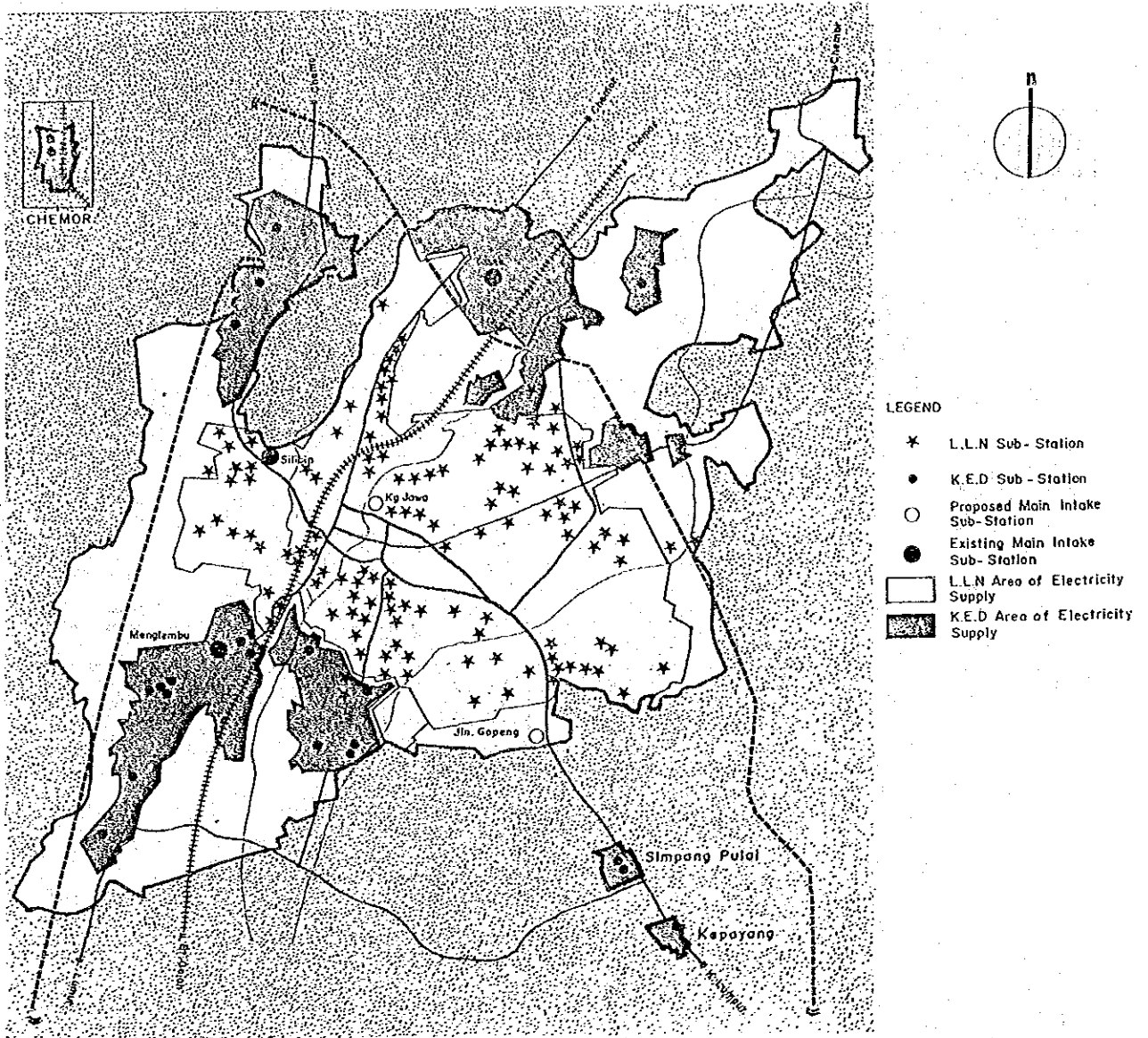
3 - 5 - 3 Water Supply.



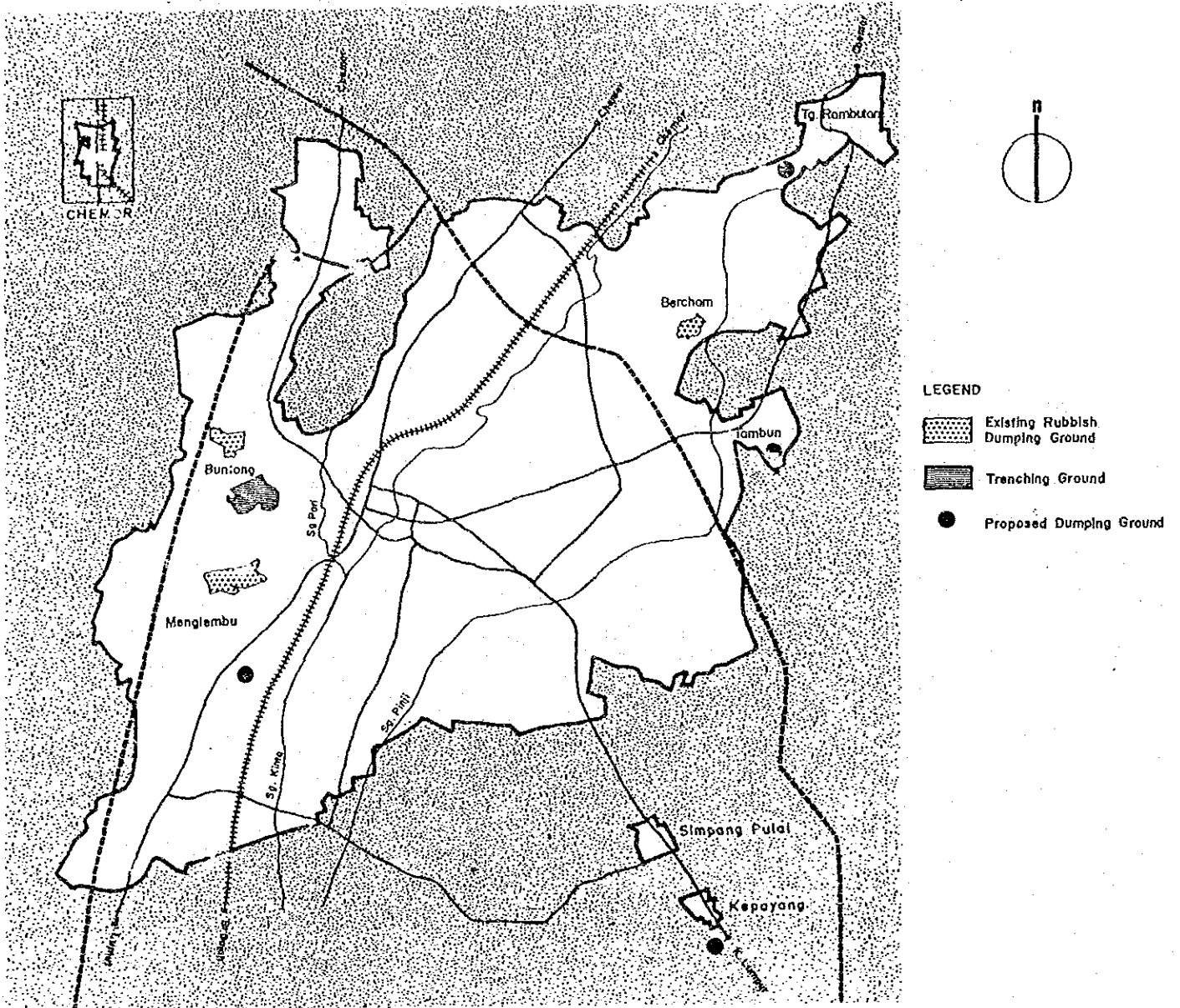
3-5-4 Telecommunication Services.

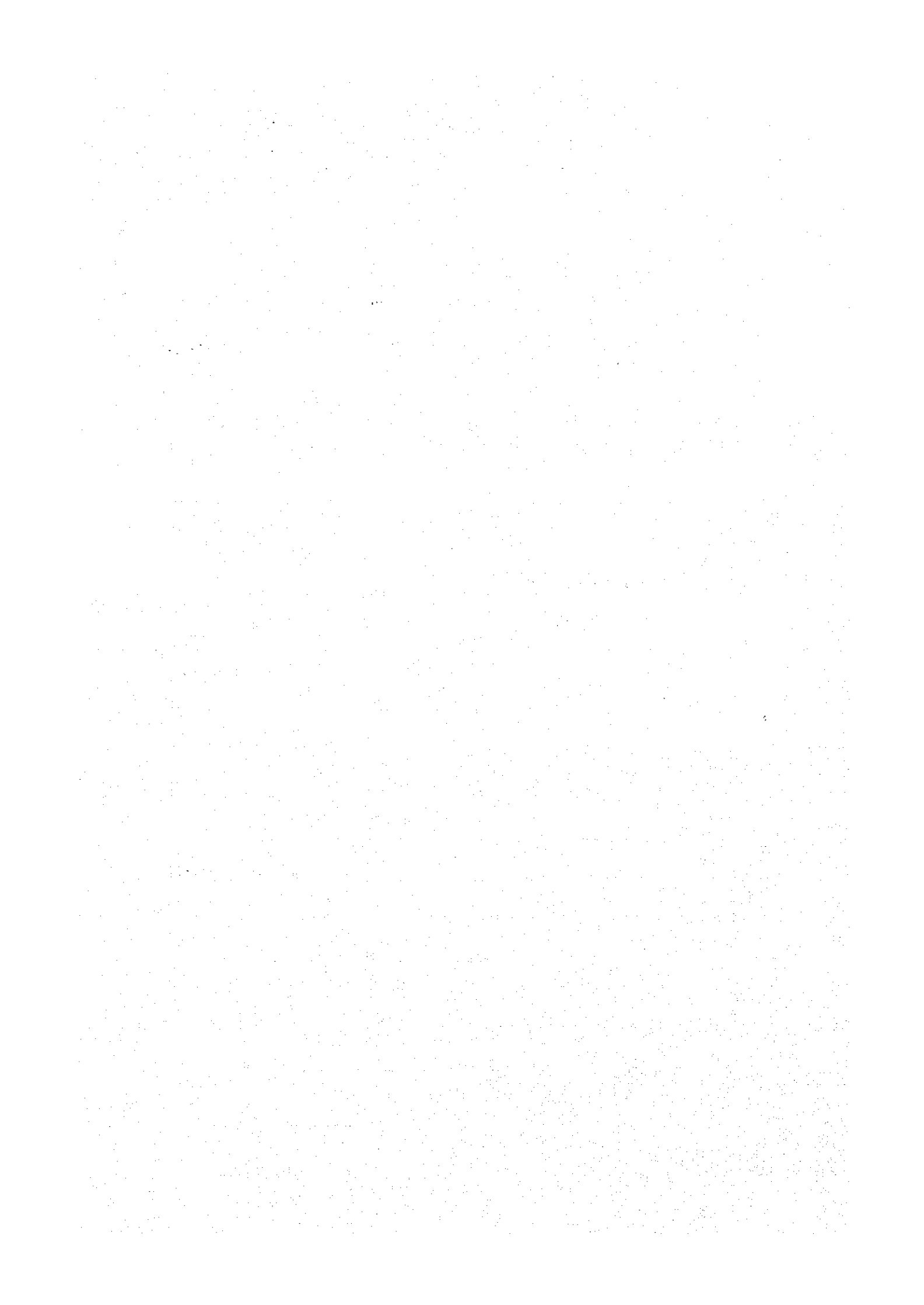


3 - 5 - 5 Electricity Supply



3 - 5 - 6 Disposal Areas.





JICA