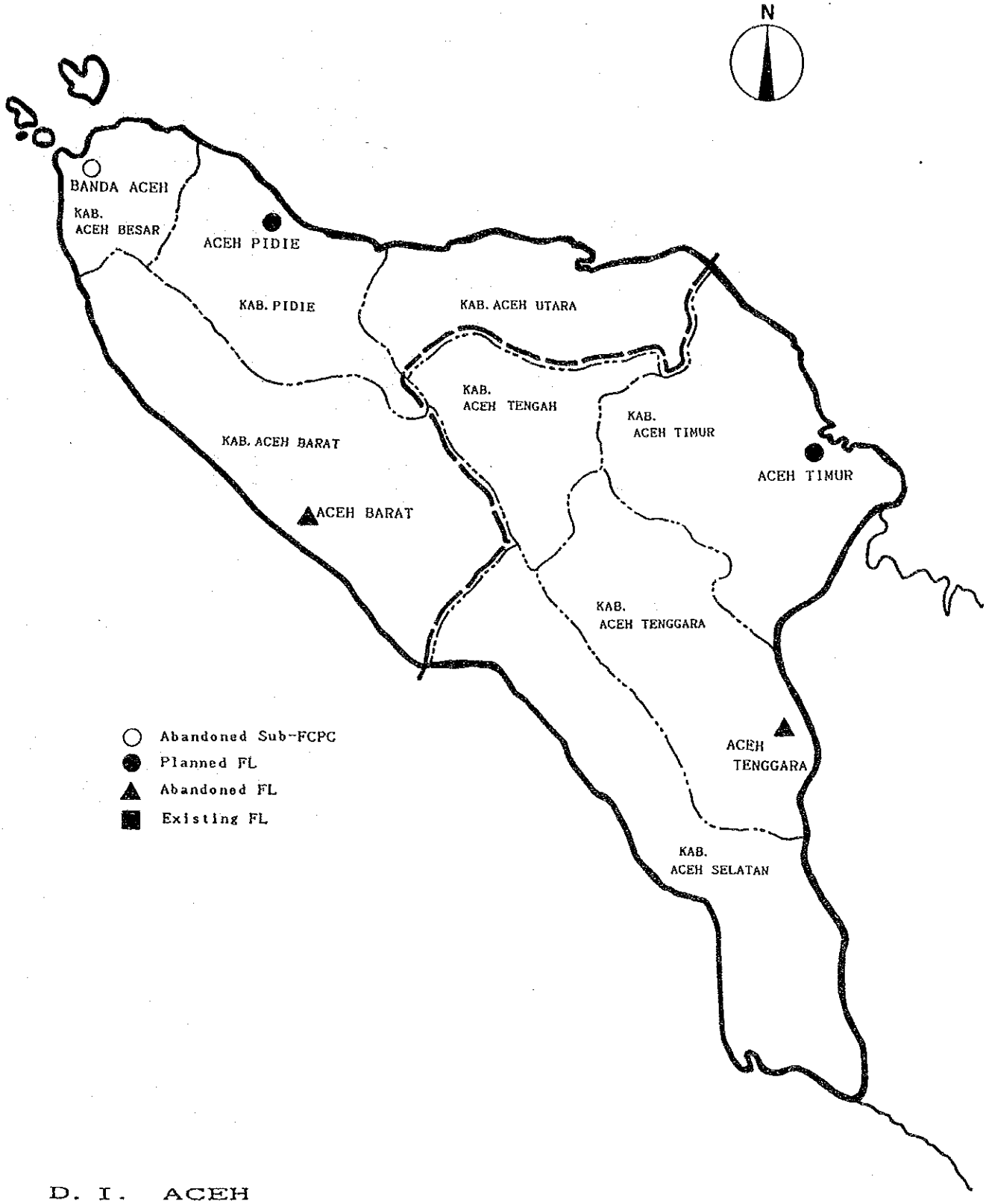
TABLE 3-3 CONDITIONS IN PROVINCES - D.I. ACEH

No.	FL	Kabupaten	No. of OU	Conditions	Harvested Area (ha)	Paddy Production (t)	Yield (t/ha)	Pest Damage	Situation of FL	FL comments
1	PIDIE	Aceh Besar	5	Yellow coffee is grown in the mountain areas. Pidie is the major rice-growing district for D.I. Aceh.	24,464	78,130		Field rat damage is largest 790 ha in Aceh Utara and 192 ha in Pidie. BPH-damaged area is 97 ha in Aceh Utara.	PIDIE FL, covering four districts in the North region of D.I. Aceh, is located in the center of the four districts.	New facility with BL office.
		Pidie	7		41.057	211,253				
		Aceh Utara	9		65,000	101,000				
		Aceh Barat	7		34,039	276,368				
			(28)		164,560	666,751	4.05			
2	ACEH TIMUR	Aceh Timur	7	ACEH TIMUR FL will cover the south region. Yellow coffee is widely grown. Palm oil and rubber plantations also exist. Secondary crop is vegetables.	42,556	136,881		Field rat damage amounts to 124 ha in Aceh Timur and 103 ha in TENGGARA. BPH-damaged area is very large, 98 ha in Aceh Tenggara.	Located in Eastern D.I. Aceh, facing the Malacca Straits.	New facility.
		Aceh Tengah	3		20,778	70,695				
		Aceh Tenggara	3		12,670	39,391				
		Aceh Selatan	4		27,670	88,287				
			(17)		103,412	335,254	3.24			
		Total	45		267,972	1,002,005	3.74			

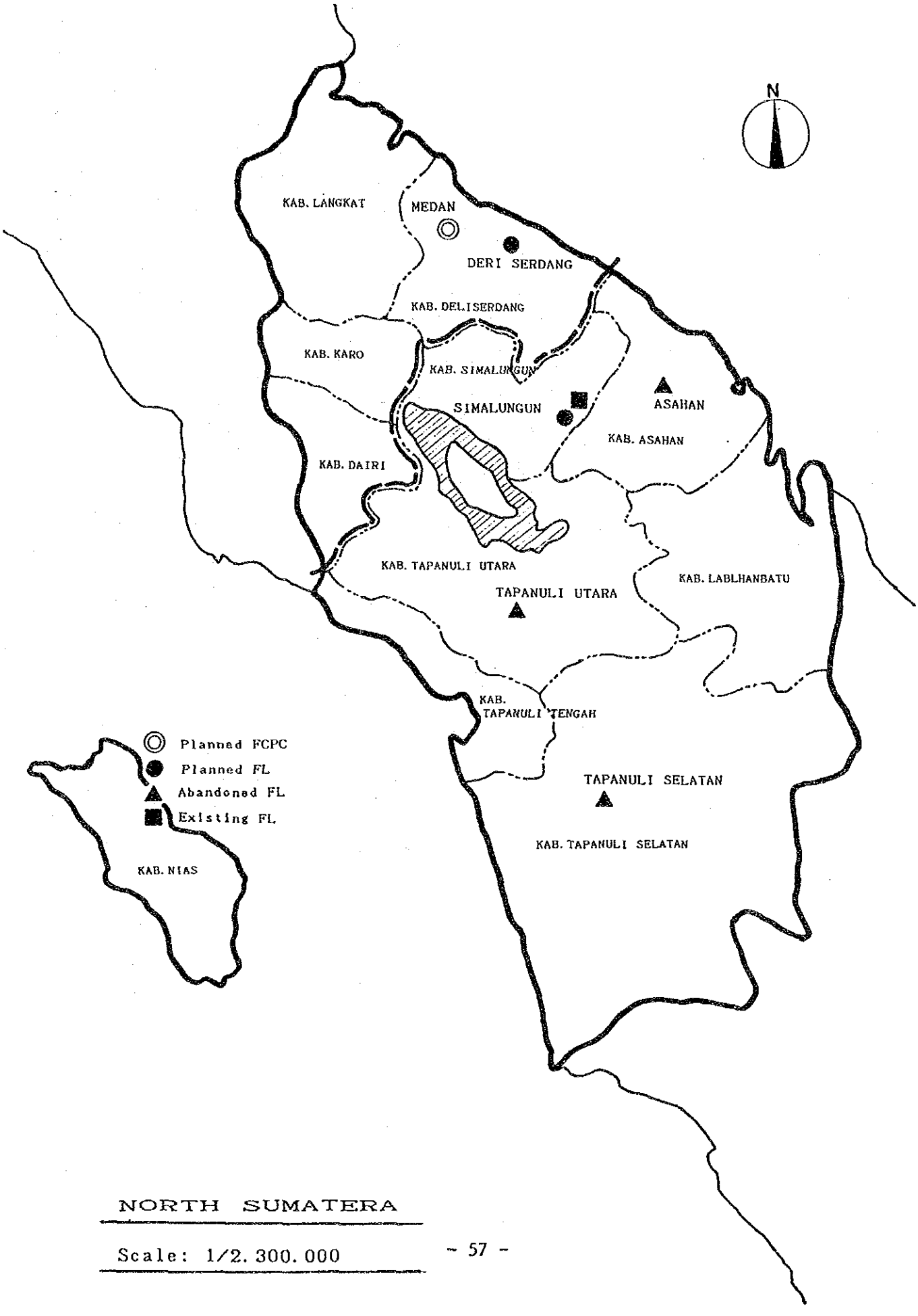


D. I. ACEH

Scale: 1/2.300.000

TABLE 3-4 CONDITIONS IN PROVINCES - NORTH SUMATRA

No.	FL	Kabupaten	No. of OU	Conditions	Harvested Area (ha)	Paddy Production (t)	Yield (t/ha)	Pest Damage	Situation of FL	FL comments
1	DELI-SERDANG	Langkat	12	Farming of estate crops such as palm oil and rubber is active. Water supply is plentiful from the Utara River. IR.46,56, are main.	57,705	210,426		Field rat damage with 3,014 ha is largest, with 488 ha for Deliserdang by BPH. In Delisendang, BPH-damaged area is 488 ha, and 3,014 ha by field rats, the largest in the province.	Located on a large plain watered by the Utara River. It is located only 20 km from MEDAN FCPC and can be coordinated.	New facilities will be added to existing facilities. VL will be added due to large field rat damage.
		Koja Medan	2		7,646	32,538				
		Deli-serdang	18		125,547	532,600				
		Karo	14		10,083	35,851				
		Dairi	8		12,137	33,361				
			(54)		213,018	864,776	3.97			
2	SIMALUN-GUN	Simalun-gun	18	25% of Asahan is irrigated. IR. 46,56, are main. The Bah Bolon River flows through Simlaun-gun. 75% of Dairi is irri-gated. IR.46,56, are main.	70,079	296,528		Simalungun has BPH damage of 112 ha. Asahan has 1,311 ha of field rat damage, which is quite large. Outbreak of BPH over 2,112 ha in Tapanuli Tengah and 829 ha in Tapanuli Selatan. Field rat damage in Tapanuli Selatan is 1,077 ha.	Facilities exist but are quite old. Covers eight southern dis-tricts in North Sumatera.	BL exists. New facilities are planned. BL will be added as testing, research and training, al-ready being performed in this FL under Project APA. 162.
		Asahan	16		55,338	217,952				
		Lablhan-batu	12		67,955	201,996				
		Tapanuli Utara	24		63,331	250,419				
		Tapanuli Tengah	6		15,239	60,608				
		Tapanuli Selatan	24		69,301	261,256				
		Nias	4		26,090	90,827				
			(104)		367,333	1,379,486	3.76			
		Total	158		580,451	2,244,262	3.87			

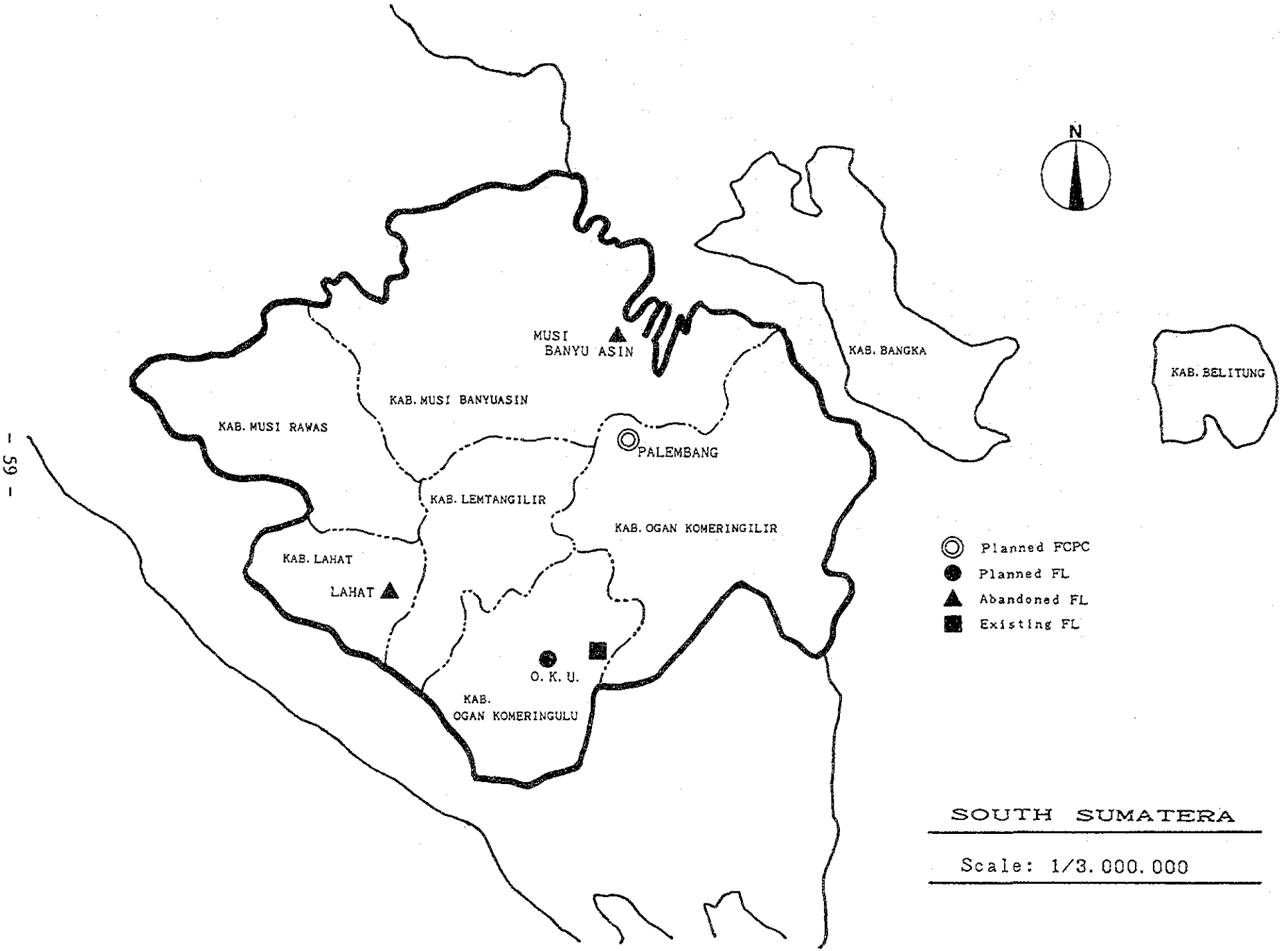


NORTH SUMATERA

Scale: 1/2.300.000

TABLE 3-5 CONDITIONS IN PROVINCES - SOUTH SUMATRA

No.	FL	Kabupaten	No. of OU	Conditions	Harvested Area (ha)	Paddy Production (t)	Yield (t/ha)	Pest Damage	Situation of FL	FL comments
1	OKU	Palembang	2	South Sumatera is a large producer of lauan timber. 50% of the agricultural industry is forestry. Transport of logs from the mountain areas via the Musi River has developed water transportation. There are immigrants from Java Island in the OKU and OKI districts engaged in plantation farming, growing rubber and palm oil.	5,820	15,780		The greatest BPH damage occurred in Musi Banyuasin with 90.5 ha, followed by OKU with 76 ha and Musi Rawas with 75 ha. Extensive field rat damage also occurred in Musi Rawas of 203 ha, Musi Banyuasin of 339 ha, OKU of 79 ha, and OKI of 60 ha.	Located in the southern part of South Sumatera. Major rice producer. Immigration plan from Java and Bali is under implementation.	New facility planned. BL for consolidated control measure will also be added.
		Musi Banyuasin	12		148,619	238,669				
		Ogan Komering-gilir								
		OKU	11		107,034	295,847				
		Lematang-gilir	12		92,134	311,593				
		Lahat	7		40,548	110,717				
		Musi Rawas	9		31,585	139,928				
		Pangkal-pinang	9		38,496	129,216				
		Bangka	2		7,767	12,581	3.1			
		Total	64		400,003	1,254,831	3.1			



SOUTH SUMATERA

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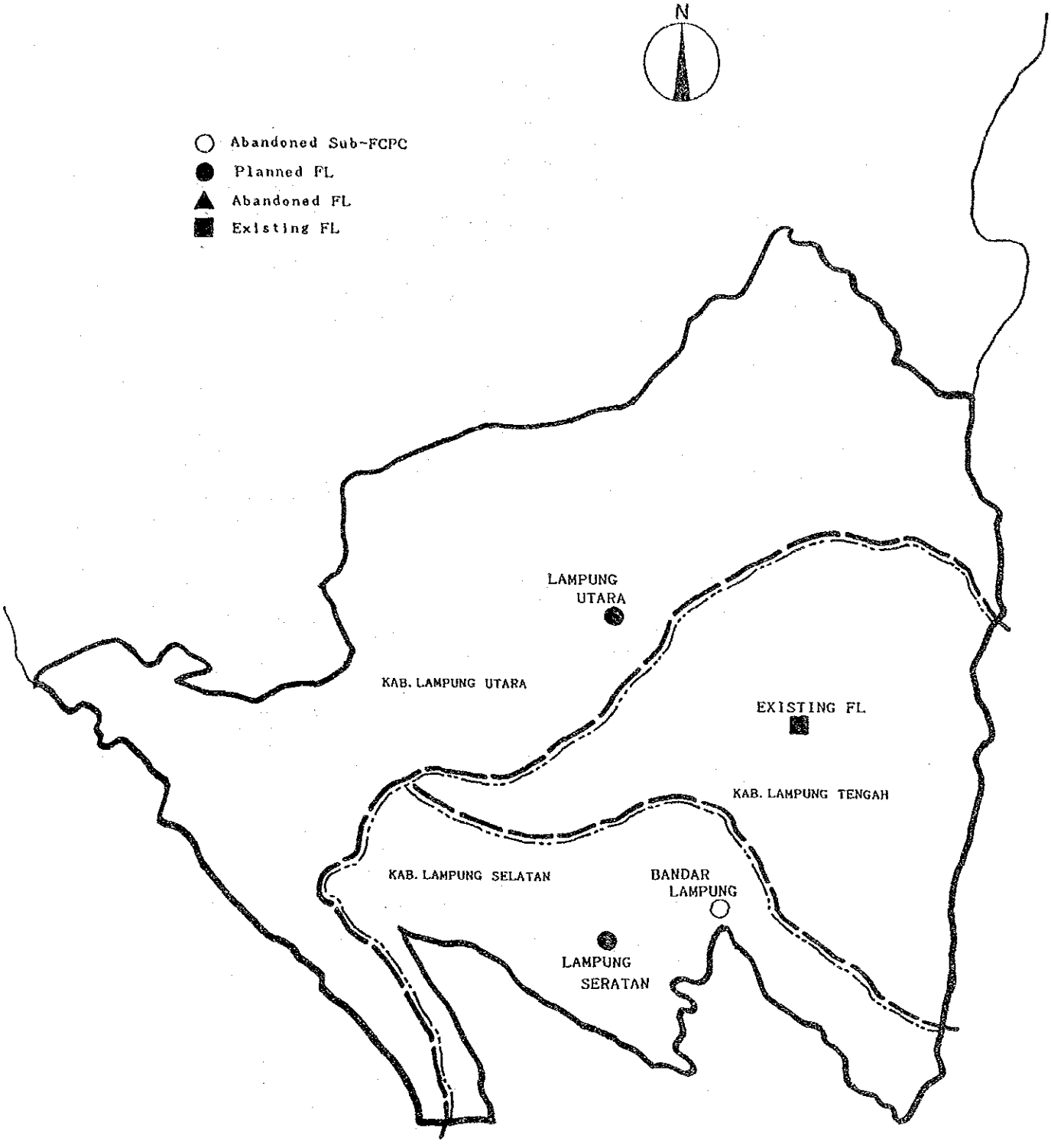
TABLE 3-6 CONDITIONS IN PROVINCES - LAMPUNG

No.	FL	Kabupaten	No. of OU	Conditions	Harvested Area (ha)	Paddy Production (t)	Yield (t/ha)	Pest Damage	Situation of FL	FL comments
1	LAMPUNG TENGAH (Existing)	Lampung Tengah	15	Lampung Tengah is a major rice-growing area in the province of Lampung. IR.42.	147,051	498,843	3.39	BPH damage, 1,003 ha and field rat damage 1,332 ha.	Located in the center of Lampung Tengah.	Already exists.
2	LAMPUNG UTARA	Lampung Utara	14	Good irrigation program.	102,421	272,397	2.7	Damage from elephants and wild pigs.	Located inland in Lampung Utara region. Irrigation project has been completed and dry field rice-growing is performed.	New facility planned. VL will be added.
3	LAMPUNG SELATAN	Lampung Selatan Babdar Lampung	15 1	Close to Java Island with a good road system. Dry field farming is large.	93,701	379,258	4.05	BPH damage 466 ha and field rat damage 2,807 ha.	Located 30 km from the Regional Agricultural Office in Bandar Lampung.	New construction planned.
		Total	45		343,173	1,150,498	3.35			

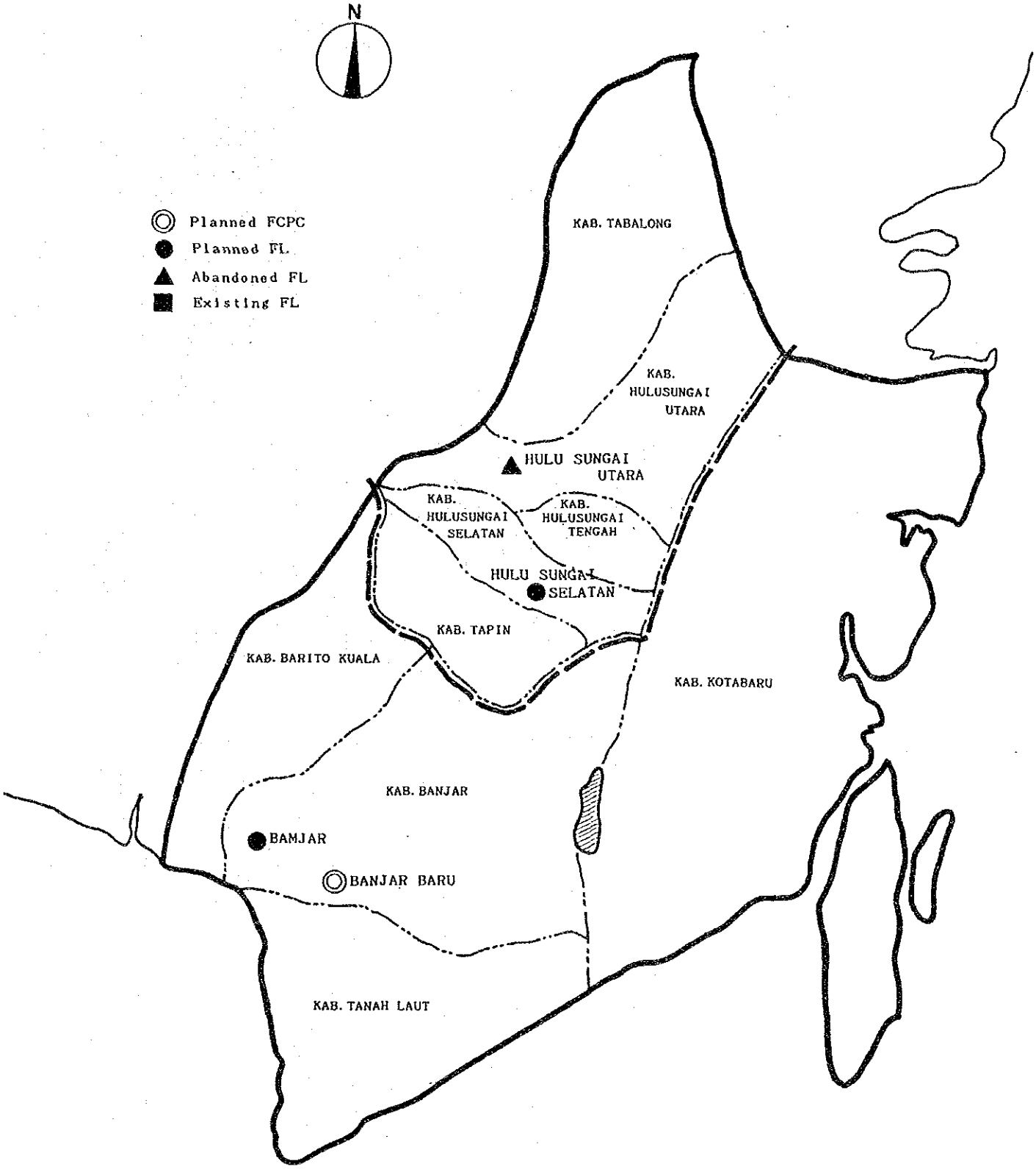


LAMPUNG

Scale: 1/1.500.000

TABLE 3-7 CONDITIONS IN PROVINCES - SOUTH KALIMANTAN

No.	FL	Kabupaten	No. of OU	Conditions	Harvested Area (ha)	Paddy Production (t)	Yield (t/ha)	Pest Damage	Situation of FL	FL comments
1	BANJAR	Tanah Laut	6	IR32, IR52, and IR42 are main.	42,575	119,210		Field rat damage is 107 ha in Barito Kuala and 100 ha in Kotabaru and BPH damage is 44 ha in Banjar.	Located about 30 km from BANJAR FCPC, covering the southern four districts of South Kalimantan.	New construction planned. BL will be added as an integrated control measure and will be the closest to the FCPC.
		Banjar	5	Banjar and Barito Kuala are large rice-growing centers lying east of Salimantan.	56,993	131,085				
		Barito Kuala	6		75,345	158,225				
		Kotabaru	4		15,787	45,782				
			(21)	The Kotabaru district will probably become an important rice-growing area.	190,700	454,302	2.38			
2	HULU SUNGAI SELATAN	Tapin	4	Hulu River provides plentiful water supply.	28,461	91,077		Field rat damage is 137 ha in Tabalong and 114 ha in Tapin.	Located slightly to the north, in the upper central part of South Kalimantan, covering the northern six districts of South Kalimantan.	New construction planned.
		Hulu Sungai Selatan	4	Irrigation programs are also underway. IR.42, 36 are main.	22,325	87,070				
		Hulu Sungai Tengah	5	The northern part is swampland where floating rice-growing is conducted.	25,347	103,923				
		Hulu Sungai Utara	4		3,217	9,008				
		Tabalong	3		17,626	54,641				
			(30)		96,976	345,719	3.56			
		Total	41		287,676	800,021	2.78			

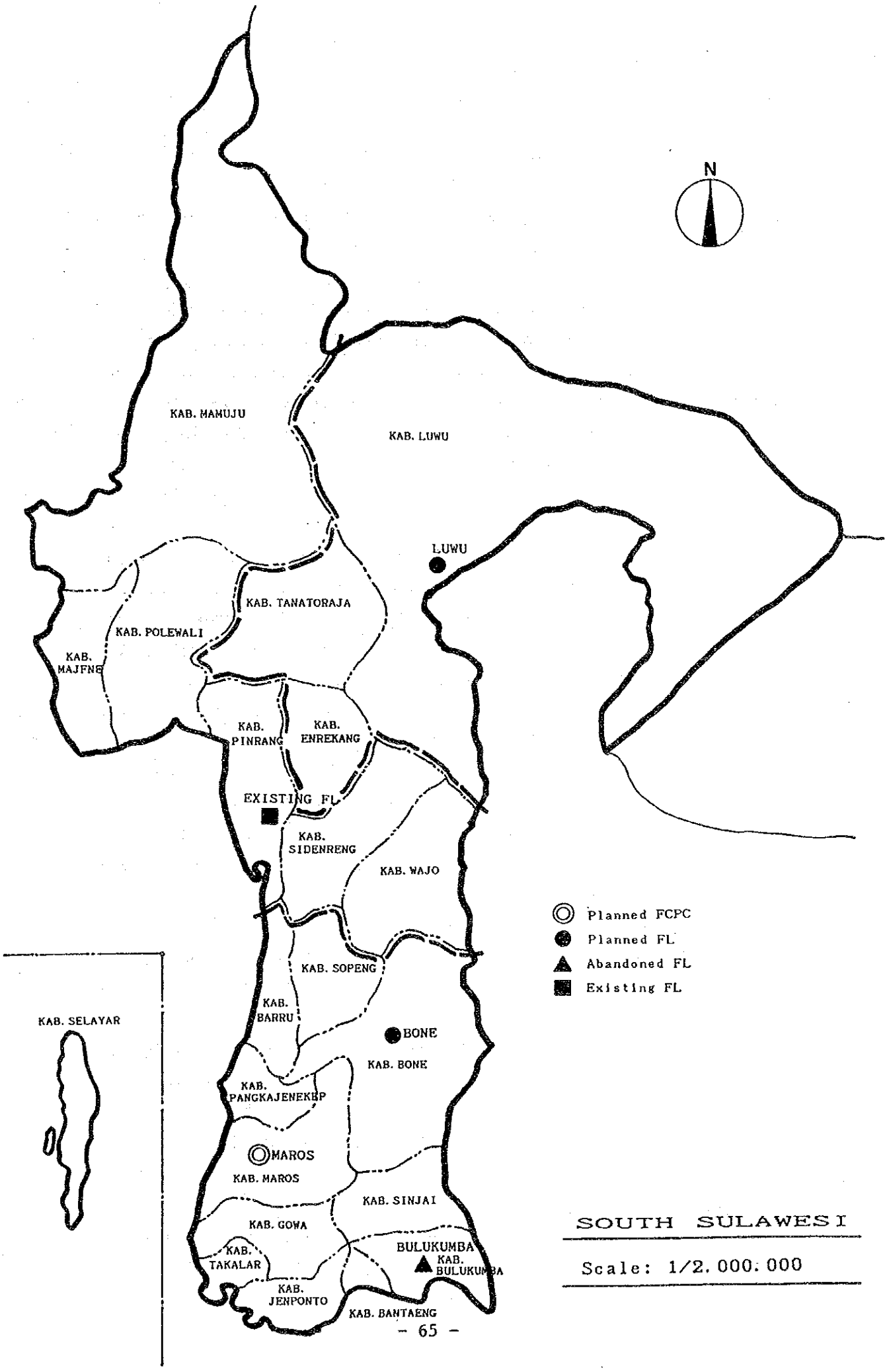


SOUTH KALIMANTAN

Scale: 1/1.500.000

TABLE 3-8 CONDITIONS IN PROVINCES - SOUTH SULAWESI

No.	FL	Kabupaten	No. of OU	Conditions	Harvested Area (ha)	Paddy Production (t)	Yield (t/ha)	Pest Damage	Situation of FL	FL comments
1	BONE	Bone	7	Bone is showing the highest harvest figures in South Sulawesi. Alternate crops are soy beans, vegatables, corn, and sweet potatoes.	87,145	377,836		BPH damage is 600 ha, with Sopeng accounting for 218 ha. Field rat damage is particularly large in Wago, 1,341 ha. Rice bug damage in Maros with 1,073 ha.	Two hours' drive from Maros where FCPC is located, covering twelve districts south of Bone.	New construction planned. Closest to MAROS FCPC; for integrated control measure, BL will be attached.
		Sopeng	4		37,828	176,791				
		Barru	2		12,717	67,605				
		Maros	3		29,337	165,945				
		Pangkajenekep	4		25,668	136,791				
		Ujungpandang	1		3,887	15,664				
		Gowa	5		35,625	163,712				
		Takalar	2		19,415	99,591				
		Jeneponto	3		15,363	54,898				
		Sinjai	2		17,122	69,174				
		Bulukumba	3		35,024	141,014				
		Bantaeng	2		12,200	61,477				
		Selayar	1		1,711	3,381				
			(39)		333,042	1,533,879	4.6			
2	PINRANG (Existing)	Wajo	7	The largest rice-growing area in South Sulawesi Island with the highest yield unit per area.	78,004	301,720		BPH damage of 250 ha in Parepare.	Located in Pinrang City, covering the central part of South Sulawesi.	Already exists.
		Parepare	1		1,046	4,394				
		Pinrang	5		66,611	338,492				
		Sidenreng	5		61,345	357,599				
		Polewali	4		32,332	164,600				
		Majfne	2		2,929	9,762				
		Mamuju	2		7,477	22,512				
			(26)		249,744	1,199,679	4.8			
3	LUWU	Luwu	8	Alternate crops are soy beans and famous Toraja coffee.	75,569	291,680		BPH damage is 310 ha, with 287 ha in Luwu. Field rat damage amounted to 1,400 ha in Luwu.	Located midway between the mountain area and the sea.	New construction planned. VL will be added due to considerable field rat damage.
		Tanatoraja	5		29,334	104,716				
		Enrekang	2		8,758	34,783				
			(15)		113,861	431,179	3.78			
		Total	80		696,647	3,164,137	4.54			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KAB. MAMUJU
KAB. LUWU
LUWU
KAB. TANATORAJA
KAB. POLEWALI
KAB. MAJENE
KAB. PINRANG
KAB. ENREKANG
EXISTING FL
KAB. SIDENRENG
KAB. WAJO
KAB. SOPENG
KAB. BARRU
BONE
KAB. BONE
KAB. PANGKAJENEKEP
MAROS
KAB. MAROS
KAB. SINJAI
KAB. GOWA
KAB. TAKALAR
BULUKUMBA
KAB. BULUKUMBA
KAB. JENPONTO
KAB. BANTAENG
KAB. SELAYAR
Planned FCPC
Planned FL
Abandoned FL
Existing FL
SOUTH SULAWESI
Scale: 1/2.000.000

3-2-6 Functions of Facilities

Contents of facilities for FCPC and FL are the same as those for Phases I and II.

Activities of FCPC had previously been centered in clerical and administrative functions, but they have been changed to place emphasis on technical and development functions. Accordingly, expansion of such facilities as laboratories, libraries, computer rooms, meeting rooms, net houses, work spaces, and warehouses is planned. They are considered necessary for FCPC operations to control and support provincial FL for upgrading technical levels in the provinces.

FL will have about 2.5 ha of experimental fields to perform pest surveillance tests, tests on the numerical decrease/increase of pests, pesticide application tests, analytical studies on relations between pests and yield decreases, etc., while conducting mainly technical functions such as freezing pests and preparing specimens in the laboratory. FL will also be the technical base for pest surveillance personnel.

Therefore, it is considered valid to consider FL facilities as being the same in terms of contents and scale as those requested previously, and should include such items as meeting rooms, laboratories, net houses, warehouses, and drying rooms.

With the Jakarta DFCP as the center, the PL will have a subsidiary function and assume responsibility for pesticide control and inspection, excluding its other function of pesticide residue tests. From the types of tests to be performed and equipment to be used, the laboratory will be composed of four rooms: the physical properties testing room, gas chromatography room, the spectro-photometer room, and the quality control office. As auxiliary facilities, a pesticide storeroom and a small meeting room will also be required.

Facility scale should be examined based upon the existing SURABAYA PL in East Jawa, which has the same functions.

VL and BL will be established at the requested sites together with the planned FL with a floor area of 72 m^2, which is on the same level as in Phases I and II of the Project.

3-2-7 Requested Equipment and Materials

(1) Equipment Requested under Phase III of the Project

The equipment under request for FCPC and FL is the same as that supplied under Phase II of the Project to the three Jawa provinces and Bali.

Requested equipment is as follows:

1) FCPC
   Laboratory equipment, training equipment, data consolidation equipment, vehicles, communications equipment, and farm equipment.

2) FL
   Laboratory equipment, meteorological equipment, training equipment, data consolidation equipment, vehicles, communications equipment, and farm equipment.

3) PL
   The equipment requested for PL will be considered on the same level as that arranged for the PL neighboring the SURABAYA FCPC in East Jawa.

The major items requested for PL are as follows:

Infrared spectrophotometer, atomic absorption flame spectrophotometer, thin-layer chromatograph scanner, centrifuge, polarograph, automatic voltage stabilizer, water purifier, gas chromatograph, densitometer, nitrogen analyzer, semi-automatic portable balance, high-temperature power stabilizer, constant-temperature water bath, extraction apparatus, particle measuring apparatus, incinerator, electronic precision balance, various types of microscopes, infrared hygrometer, gel-electrophoresis apparatus, automatic sterilizer,

chemical balance, high-speed liquid chromatograph, physical properties measuring apparatus, glass cutter set, fish toxic testing apparatus, ultraviolet spectrophotometer, draft chamber, glassware, waterstill, overhead projector, slide projector, thin-layer chromatograph set, etc.

(2) Review of Requested Equipment

Variations in equipment items and quantities for Phase III compared with the equipment arranged in Phase II for FCPC and FL are as follows:

1) The number of biological microscopes will be increased from one to two. Accordingly, dessicators will also be increased from one to two.
2) In Phase II, the schedule calls for the supply of 180 motorcycles to OU. In addition to this, the Indonesian Government has purchased and arranged 2,000 motorcycles as of January 1987. Under these circumstances, additional motorcycles for OU use, considered unnecessary for Phase III, were cancelled.
3) In Phase II of the Project, each of the three motorcycles were provided for all FL, SEMARANG FCPC and DENPASAR FCPC. In Phase III, each of the two motorcycles for communications use are to be provided for all FCPC and FL.
4) The quantities of knapsack sprayers were planned to be three for FCPC, five for A-type and C-type FL, and seven for B-type FL. However, sprayers are necessary for the test spraying of various pesticides, and a total of ten knapsack sprayers are to be provided for each facility. The capacity will be five liters for FCPC use, and ten liters for FL use.
5) For the FCPC library, the addition of wooden bookshelves and filing stands are considered.
6) For FL, the addition of insect storage cabinets is considered.
7) The slide projector and overhead projector for FCPC will not be included in the arrangement under Phase III, since they have already been provided.
8) In considering practicability, incinerators for FCPC and stencil/printing machines for FL will be of a lower grade than those arranged in Phase II.

PL equipment to be excluded or added to those arranged for the existing SURABAYA PL are as follows:

1) As a fish toxic testing apparatus has no direct relation with MAROS PL functions, cancellation is considered valid. Fish toxic testing apparatuses include an infrared spectrophotometer, atomic absorption flame spectrophotometer, polarograph, water purifier, nitrogen analyzer, high-temperature power stabilizer, extraction apparatus, particle measuring apparatus, infrared hygrometer, gel-electrophoresis apparatus, automatic sterilizer, chemical balance, etc.
2) The slide projector, overhead projector and screen are excluded from the training equipment because those belonging to FCPC can be jointly used. Various types of microscope and incinerator are also excluded for the same reason.
3) The necessity of arrangement for central and side island tables will be examined.
4) Since a deionized water apparatus, oven, and hydrogen generator are considered useful for pesticide analysis, those will be provided to MAROS PL.

3-3 PROJECT OUTLINE

3-3-1 Basic Concept of Facility Functions

Two areas to be developed with high priority for upgrading the network system and promoting technical control over various facilities in line with the policies carried out in Phases I and II of the Project are as follows:

1) Strengthening of pest and disease surveillance and monitoring techniques
2) Development of pest and disease forecasting and control technonology

(1) Strengthening of Pest and Disease Surveillance and Monitoring Techniques

The important function of making observation studies on pests and diseases in the field is carried out by Pest Observers (PO). FL and FCPC must strengthen the surveillance system through the provision of proper guidance and supervision to PO by analyzing various aspects of surveillance activities such as observation subjects, procedures, and time. In heavy contamination areas, sampling reports on special field data concerning specific pests and diseases should be collected and subjected to extra-detailed monitoring by farmers and extension workers.

The major pests and diseases at each level (regional, provincial and national) should be identified and classified, and specialized surveillance and monitoring activities carried out on the designated pests and diseases. The designation should be reviewed annually at each level and altered as necessary. This will facilitate geographical analyses of contaminated areas and incurred damages through studies of annual changes in the distribution of specific pests and diseases.

More important are practical reports on the numerical population of pests during the cultivation or growing stages of rice and on estimates of yield losses at harvest time.

Forecasting must not only be concerned with forecasting pest and disease outbreaks, but also with projections of related yield losses, to develop into an effective surveillance and monitoring techniques. Such data on damages and yield loss rate are reviewed by PFC/DFCP and FCPC to make estimates on production losses, and through integration with monitoring data collected from FL, OU, farmers and extension workers, to establish calculation or estimation standards for production data.

(2) Development of Pest and Disease Forecasting and Control Technology

The PFC constructed in Phase I of the Project will train FCPC and FL technical personnel in both the theory and practice of pest and disease forecasting and control technology. The study of designated pest and

diseases at national and provincial levels as well as specific studies, forecasting and control, at district and lower levels.

The first step in developing forecasting technology is to establish forecasting units. From the viewpoint of current guidance policies on farm production, the District Extension Office is the most effective implementing center because it also acts as the base for activating Pest Brigades. The district level is considered the most effective unit for the collection of forecast information and formulation of forecast maps. Forecast information is compiled by a representative of the district Pest Observers (presently refered to as "coordinator") together with FL and in coordination with the Crop Protection Section of the District Extension Office.

The next step in technology development is identification of the subject of forecasting activities. Since several seed varieties are grown in the same area, forecast will be clearly confined to varieties that are susceptible to specific pests or diseases and to the date of rice transplanting in order to obtain accurate forecasting data. Collection of weather condition data, particularly rainfall, from the district office or meteorological station is another prerequisite for accurate forecasting. PFC will prepare a manual which provides standards defining the relationship between weather and the prevalence of a specific pest or disease.

Information and observation data on common rice varieties and cultivation practices in various districts and their relation to a specific disease will mainly be prepared by FL along with the results of tests performed in farms. FCPC will compile such data and issue information or warnings to the District Extension Offices. FCPC will also take measures for the timely distribution of pesticides and equipment for pest control. Yield loss forecasting with higher accuracy and the evaluation of forecasting techniques can be achieved through continuous and successive surveys and the collection of data.

The processes of the basic activity plans described in this section are arranged and presented as a table in the Supplement, Table-7.

3-3-2 Organization and Personnel Management

(1) Personnel Allocation Schedule

The function and personnel allocation plan for each FCPC and FL basically remains the same as in Phases I and II of the Project. In February 1987, DGFCA planned personnel allocation in accordance with the policies for FCPC/FL activities as follows:

1) FCPC

Position	Number
Head	1 (university graduate)
Instructor (Pest Control)	2
Instructor (Monitoring)	3
Instructor (Technological Development)	1
Instructor (Pesticides)	1
Technician and Assistant	21
Head of Administration	1
Office Worker	26
Part-time Worker	10
Total	65

The two Pest Control instructors will take care of damage analysis and data collection/analysis of control effects, while the three instructors for monitoring will take care of the estimation of production decrease and collection/analysis of meteorological data.

The laboratory and net house will be utilized and managed jointly by instructors, technicians and assistants. When use of the farm is required for local technical development tests, they will carry it out in coordination with the nearest FL.

FIG. 3-1 shows the structure of FCPC.

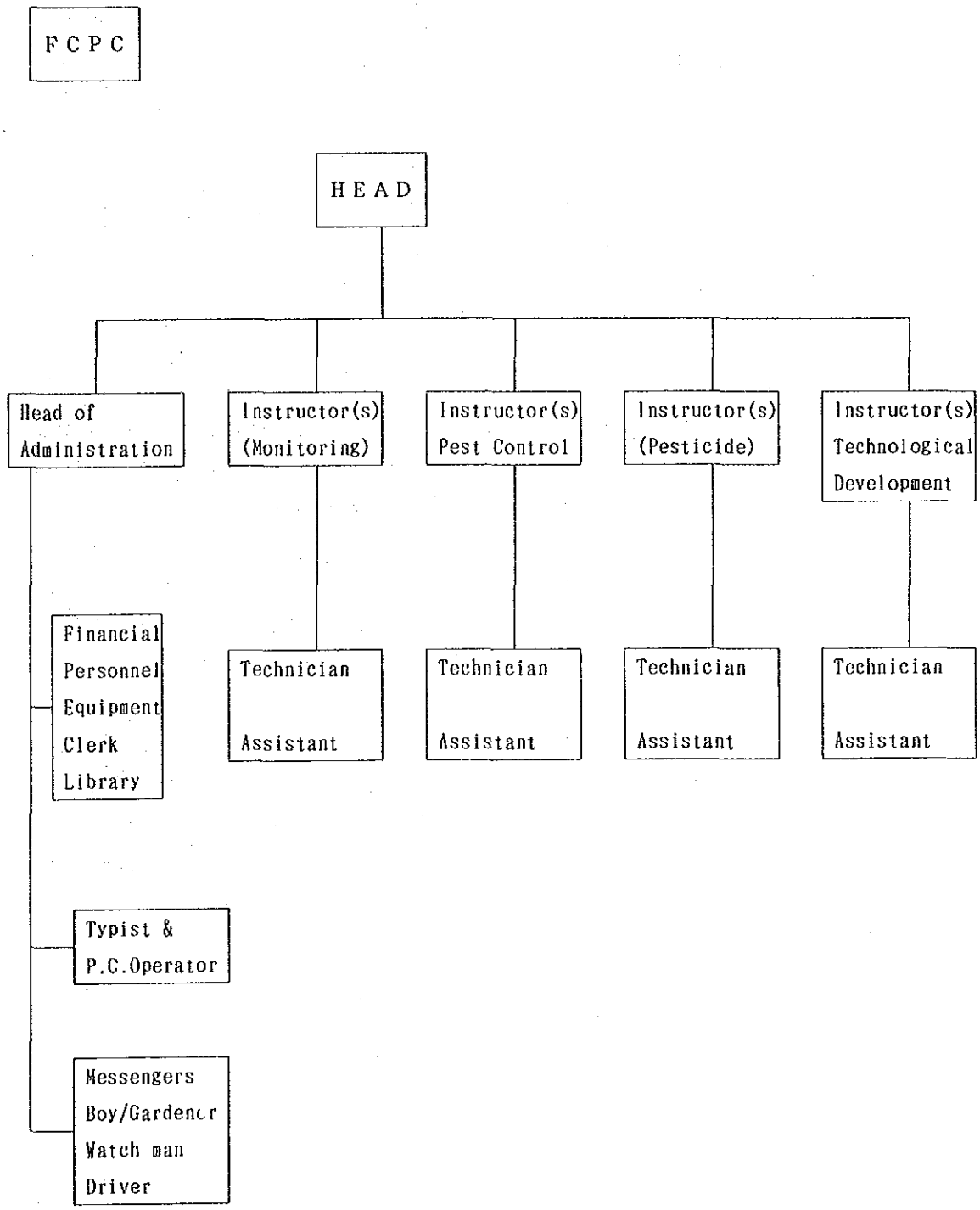


FIG. 3-1

2) FL

Position	Number
Head	1
Instructor (Pest Control)	2
Instructor (Monitoring)	3
Technician and Assistant	10
Head of Administration	1
Office Worker	3
Part-time Worker	12
Total	32

FL provided with a biological control laboratory (A-type) or field rat control laboratory (B-type) will have three (3) extra technicians, and three (3) extra assistants for a total of 38 persons.

The laboratory will consist of two rooms, one for pest control and the other for disease control, or a three-room BL or VL is attached, with each room having a staff of five or six.

The farm and the net house will be used commonly by the technical staff, and maintenance will be done by the Farm Coordinator. The two Pest Control Instructors will take care of damage analysis and data collection/analysis of control effects, while the three instructors for monitoring take care of the estimation of production decrease and collection/analysis of meteorological data.

The structure of FL is as presented in FIG. 3-2.

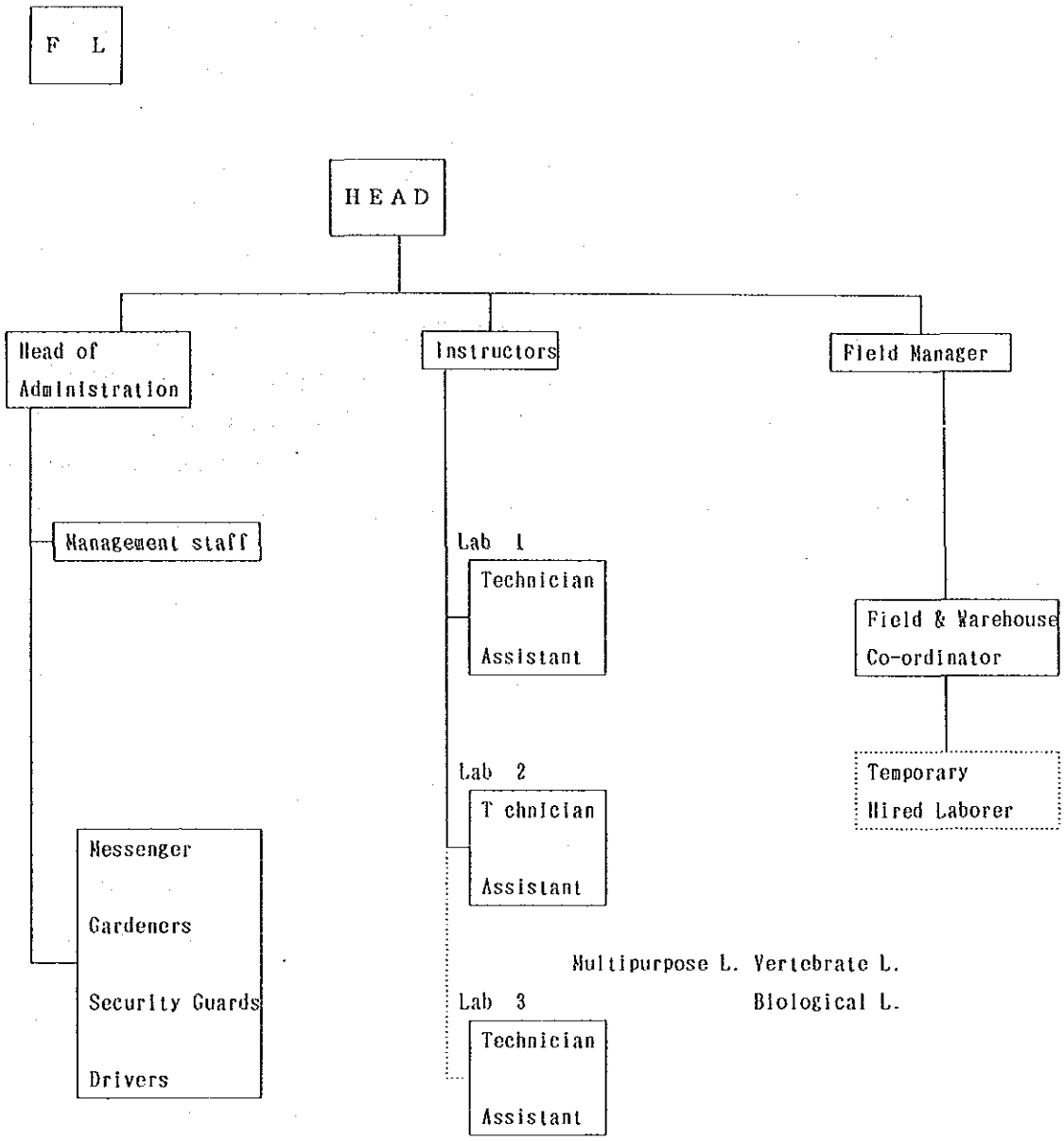

F L
HEAD
Head of Administration
Instructors
Field Manager
Management staff
Lab 1
Technician Assistant
Field & Warehouse Co-ordinator
Lab 2
T chnician Assistant
Temporary Hired Laborer
Messenger
Gardeners
Security Guards
Drivers
Multipurpose L. Vertebrate L.
Lab 3
Biological L.
Technician Assistant

FIG. 3-2

3) PL

Position	Number
Head	1
Technician	2
Assistant	5
Pesticide Management	1
Electrical Technician	1
Total	10

The laboratories consist of four rooms; Physical Properties Determination Room, Gas Chromotography Room, Spectrophotometry Room, and Stabilization Room. They will have a staff of two technicians and five assistants. The provincial FCPC will be responsible for the supervision and management of the overall facility.

FIG. 3-3 shows the structure of PL.

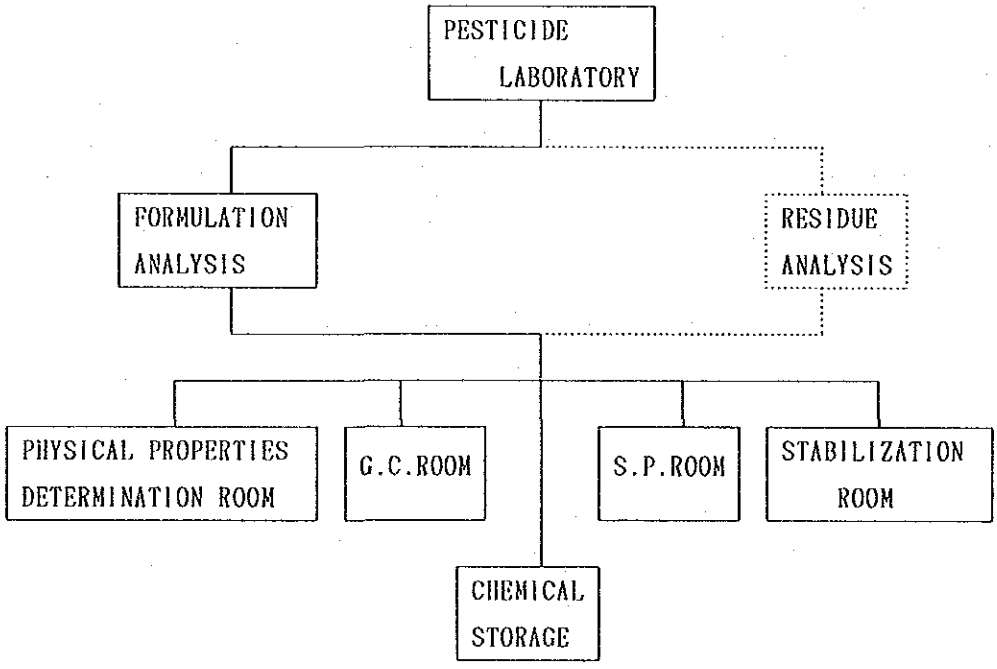


FIG. 3-3

(2) Present Status of Personnel Allocation

As for the current (March 1987) personnel allocation to the facilities under the control of DFCP, refer to Table 2-2 in 2-4-1 "DFCP and Management System."

Necessary personnel are obtained through transfers from other organizations in the Ministry of Agriculture (MOA), transfers from other divisions in DGFCA and DFCP, and through employment.

Hiring and training of FL personnel are being conducted gradually in accordance with construction of FL facilities. Plans call for 40% to be hired in the initial year and 80 to 90% of the necessary personnel within three years after completion of the facility. The technical staff employment schedule of DGFCA in 1987 is as follows:

TABLE 3-9 Employment Schedule in DGFCA in 1987
(Technical staffs)

	FCPC		FL		PL		PO		PCB		Total	
	III	II	III	II	III	II	III	II	III	II	III	II
D.I. Aceh	2	-	-	2	-	-	-	47	-	6	2	55
N. Sumatera	3	8	-	14	-	2	-	114	-	8	3	146
S. Sumatera	4	5	-	10	-	-	-	84	-	2	4	101
Lampung	-	-	-	5	-	-	-	69	-	6	-	80
W. Jawa	4	4	2	11	-	-	-	304	-	14	6	333
Cent. Jawa	4	5	-	15	-	-	-	251	-	8	4	279
E. Jawa	4	6	5	23	-	2	-	450	-	6	9	487
S. Kalimantan	2	9	-	1	-	-	-	39	-	4	2	53
S. Sulawesi	5	10	-	16	-	2	-	118	-	10	5	156
Bali	2	10	-	4	-	-	-	35	-	4	2	53
Total	30	57	7	101	-	6	-	1,511	-	68	37	1,743

Source: DFCP

III: University graduates
II: High school graduates
PCB: Pest Control Brigade

3-3-3 Proposed Functions of Each Facility

Operational plans for FCPC, FL and PL for Phase III are the same as those specified for Phases I and II, and as outlined in Section 3-3-1 "Basic Concept of Facility Functions". They are (1) strengthening of pest and disease surveillance and monitoring techniques and (2) development of pest and disease forecasting and control technology.

An outline of the activities to be performed by FCPC, FL and PL is given below.

(1) FCPC

1) Data collection and analysis at province and district levels.

2) Provision of guidance and advice to agricultural promotion organizations in the province on pest information, forecasting and control.

3) Establishment of practical forecasting and control methods at the province level.

4) Guidance and supervision of FL and OU within the province.

5) Exchange of information and advice on pest forecasting and control with Agricultural Extension Dept. in provincial governments.

6) Assistance regarding maintenance, inspection, arrangement, etc. of equipment and materials for Provincial Pest Brigades.

7) Technical development of integrated control methods, field rat control measures, etc. according to prevailing conditions within the province.

(2) FL

1) Experimental study and surveillance on forecasting and control.

2) Data analysis at district level and information exchange with District Extension Office.

3) Guidance and supervision of Pest Observers.

4) Study and technical development of integrated control methods including natural control agents and field rat control measures. (Specific FL only.)

(3) OU

1) Pest surveillance under direction of FL.

2) Monitoring of species and cultivation methods within assigned area.

3) Exchange of information at Kec and BPP levels.

(4) PL

1) Analysis and tests for quality control of pesticides.

3-3-4 Outline of Facilities

Facilities to be constructed under this project are as follows:

(1) Food Crop Protection Center (FCPC)

1) MAROS FCPC, South Sulawesi

a) Main building (RC structure, one single-story building)
approx. 665 m^2

Main building consists of Head Office, Head RM, Technical staff RM, Laboratory, Meeting RM, Library, etc.

b) Storage (RC structure, one single-story building)
approx. 50 m^2

c) Net house (aluminium frame structure, one single-story building)
approx. 50 m^2

d) Working space (steel frame structure, one single story building)
approx. 50 m^2

e) Pesticide Laboratory Room (including warehouse)
approx. 343 m^2

Total : approx. 1,158 m^2

2) MEDAN FCPC, North Sumatera

a) Main building (RC structure, one single-story building)
approx. 609 m^2

Main building consists of Head RM, Technical Staff RM, Laboratory, Meeting RM, Library, etc.

b) Storage (RC structure, one single-story building)
approx. 50 m^2

c) Net house (aluminium frame structure, one single-story building)
approx. 50 m^2

d) Working space (steel frame structure, one single story building)
approx. 50 m^2

Total : approx. 759 m^2

3) BANJAR BARU FCPC, South Kalimantan

a) Main building (RC structure, one single-story building)
approx. 644 m^2

Main building consists of Head RM, Technical staff RM, Laboratory, Meeting RM, Library, etc.

b) Storage (RC structure, one single-story building)
approx. 50 m^2

c) Net house (aluminium frame structure, one single-story building)
approx. 50 m^2

d) Working space (steel frame structure, one single story building)
approx. 50 m^2

Total : approx. 794 m^2

4) PALEMBANG FCPC, South Sumatera

a) Main building (RC structure, one single-story building)
approx. 644 m^2

Main building consists of Head RM, Technical staff RM, Laboratory, Meeting RM, Library, etc.

b) Storage (RC structure, one single-story building)
approx. 50 m^2

c) Net house (aluminium frame structure, one single-story building)
approx. 50 m^2

d) Working space (steel frame structure, one single story building)
approx. 50 m^2

Total : approx. 794 m^2

(2) Field Laboratories (FL)

1) Main Building

The main buildings of FL located in eleven (11) locations (two (2) in South Sulawesi, two (2) in North Sumatera, two (2) in South Kalimantan, two (2) in D.I. Aceh, two (2) in Lampung, and one (1) in South Sumatera) are divided into three categories of A-type, B-type, and C-type.

a) A-type FL
LUWU
DELISERDANG
BANJAR
LAMPUNG UTARA

b) B-type FL
BONE
SIMALUNGUN
PIDIE
OKU (OGAN KOMERING ULU)

c) C-type
HULU SUNGAI SELATAN, ACEH TIMUR, LAMPUNG SELATAN

The main building consists of Head office, Laboratory, Meeting RM, etc. A Vertebrate Laboratory of approx. 72 m^2 is added to A-type FL, and a Biological Laboratory of approx. 72 m^2 to B-type FL.

i) A-type FL, B-type FL 8 buildings
RC structure, one single-story building approx. 412 m^2

ii) C-type FL 3 buildings
RC structure, one single-story building approx. 340 m^2

iii) Net house (for all FL)

Aluminum frame structure, two single-story buildings

approx. 100 m^2 in total

iv) Storage (for all FL)

RC structure one single-story building — approx. 50 m^2

v) Drying floor (for all FL)

Concrete floor, without roof — approx. 120 m^2

3-3-5 Outline of Equipment

	Application	Main Equipment
1. Laboratory Equipment		
(1) Insect Pest Lab.	Experiments on collected inspect specimens to study insect physiology and ecology.	Insect trap, suction sampler, knapsack spray, microsyringe, dessicator, monocular microscope, stereo microscope, hydrometer, anlytic balance, chemical balance, thermometer, psychrometer, rearing box, miniature thresher
(2) Phytopathology Lab.	Experiments on rice phytopathology and varietal resistance and pathogenetic experiments such as cause factors and rice disease identification.	Autoclave, incubator, dissection microscope, blender, dissection instrument, hot plate, loupe, knapsack sprayer, counter, thermometer, recording hygrometer, glassware, laminar flow hood, inoculator
(3) Weed Lab.	Tests on ecology and weed physiology.	Specimen making equip., stereo microscope, sprayer.
(4) Vertebrate Lab.	Experiments on captured and cultivated field rats and other harmful animals to clarify physiology and ecology.	Dissection set, steel rule, freezer, balances, binocular microscope.
(5) Biological Lab. (Pest Control)	Test on collected and cultivated pest control agents and insects to determine physiology and ecology and also to clarify chemical resistance.	Autoclave, incubator, dissection microscope, freezer, refrigerator, oven, blender, dissecting kits, hot plate, magnifying glass, filter paper bunsen burners, knapsack sprayers, hand counter, thermometer, recording thermo-hygrometer, glassware, parafilm, rearing boxes, laminar flow hood
2. Meteorological Equipment	Daily meteorological observations to clearly identify relationship of climatic conditions to pest and insect outbreaks.	Sunshine duration recorder, thermometer, counter anemometer, recording rain gauge, psiche evaporimeter, thermometer, evaporimeter hook gauge, sill well, recording thermohygrograph, evaporation pan A, max./mim. thermometer, instrument shelter

	Application	Main Equipment
3. Training & Extension Equipment	Training in extension and dissemination of new technology on pest control and outbreak forecasting, and distribution of printed materials.	Audio & visual equipment printing machine, equipment/ apparatus for training
4. Data Consolidation Equipment	Statistical processing of data collected from subordinate organizations according to national standards, and categorizing and analysis of test data.	Personal computer, programmable calculator, motorcycle
5. Vehicles	Field tests, sample collection, guidance trips, transport of materials for experimental paddy field, and for transporting personnel (e.g. Pest Observers) and materials.	Mobile laboratory, pick-up truck
6. Communications Equipment	Telefax Equipment: Transfer of urgent data and documents among DFCP, PFC and FCPC. SSB Radio Telephone: Substitute for telephone between FL and FCPC having difficulty in arranging telephone connections.	Telefax SSB radio
7. Farm Equipment	Farming operation on experimental paddy fields at PFC and FL.	Power tiller, trailer, thresher
8. Pesticide Inspection Equipment	Analysis of effective ingredients for quality control of pesticides	Gas chromatograph, high performance liquid chromatograph, thin-layer chromatograph scanner, ultrasonic washer, rotary evaporator, spectrophotometer, glassware & miscellaneous, draft chamber, hydrogen generator, physical properties measuring apparatus, island table, side table, water still, water bath incubator

3-3-6 Technical Cooperation

Project ATA-162 entered into the stage of Phase II of a five-year period from 1987.

Agreement has been reached to carry out cooperative study on the following subjects under the Phase II of the ATA-162:

(1) Technical guidance on food crop protection measures i.e. programming of annual operational plan, data filing and analysis.

(2) Field and laboratory studies for the implementation of forecasting, surveillance and control of insect pests, diseases and rats of rice and palawija mainly soybean.

(3) Improvement of pesticide analysis for the purpose of pesticide quality control and analysis of pesticide residue, particularly on food crops.

(4) Other activities

1) Exchange of information, specimens and research reports

2) Advice on training for food crop protection staff and workers

3-3-7 Current Status of Project Sites

Facilities planned for construction under Project ATA-389 Phase III are four FCPC and eleven (11) FL, but all 26 requested construction sites totaling, four FCPC, two SUB-FCPC, and 20 FL were surveyed.

The present situation at the requested construction sites are given below. (DISTRICT, Kabupaten)

(1) Food Crop Protection Centers (FCPC)

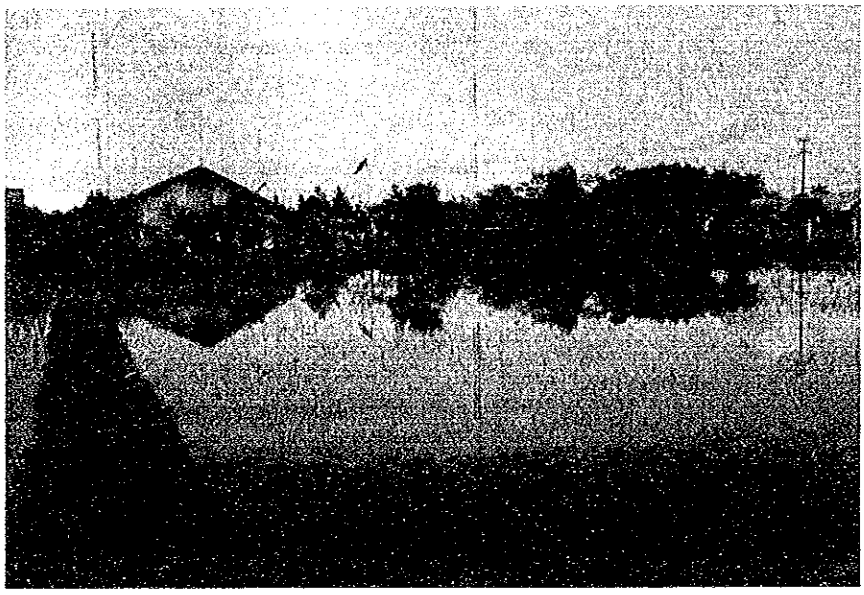
1) MAROS, South Sulawesi

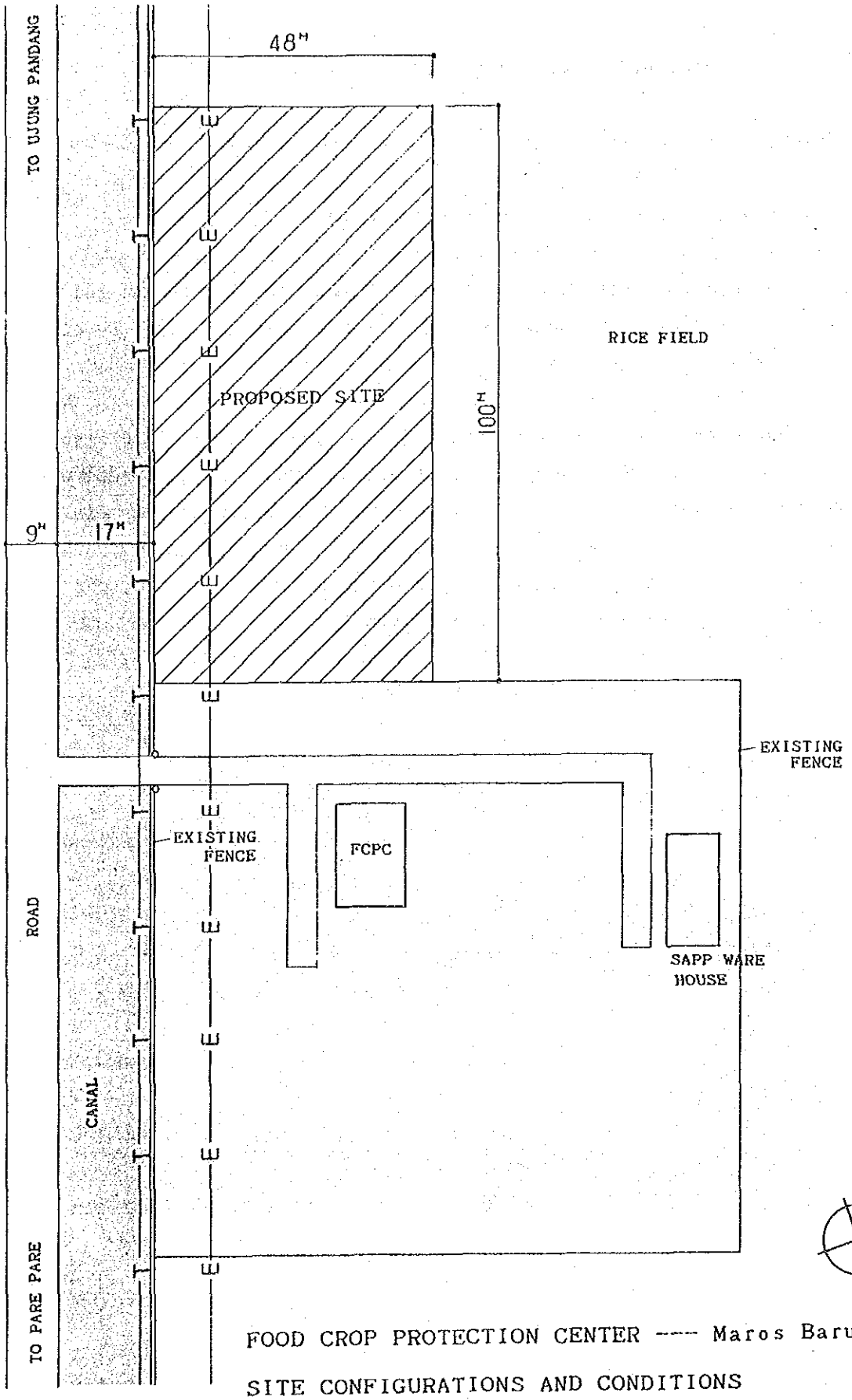
(a) Present Condition of Construction Site

The construction site of the proposed Maros facility is located about 30 km north of Ujung Pandang. It is about 1.5 hours by air from Jakarta to Ujung Pandang.

The building site is on the south side of the existing FCPC with a 9-meter road running along the east side. Paddy fields spread out on the west side. At present, the building site is a paddy field and will require a landfill of about 1 m. The access road to the site requires crossing over an open ditch approx. 3 m wide, for which construction of a bridge is requested.

PL will also be established within the site.





FOOD CROP PROTECTION CENTER ---- Maros Baru / MAROS

SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

(b) Related Infrastructure

a) Electric Power

At present, power is being supplied to the existing FCPC from the power cable running along the road at the east side of the building, and no problem is foreseen for the proposed facility. Power supply will be 220V/50Hz.

b) Telephone

A telephone cable is laid along the east boundary of the proposed site. It is possible to run a line into the site from this cable.

c) Water Supply

City water is not available. It will be necessary to dig wells.

d) Drainage

Sewage ducts do not exist. Sewage must be treated in sewage tanks and returned to the earth through seepage sumps.

Rain water will be collected in drainage canals around the building and discharged into the surrounding paddy fields.

e) Gas

City gas is not available. A propane gas supply system must be installed.

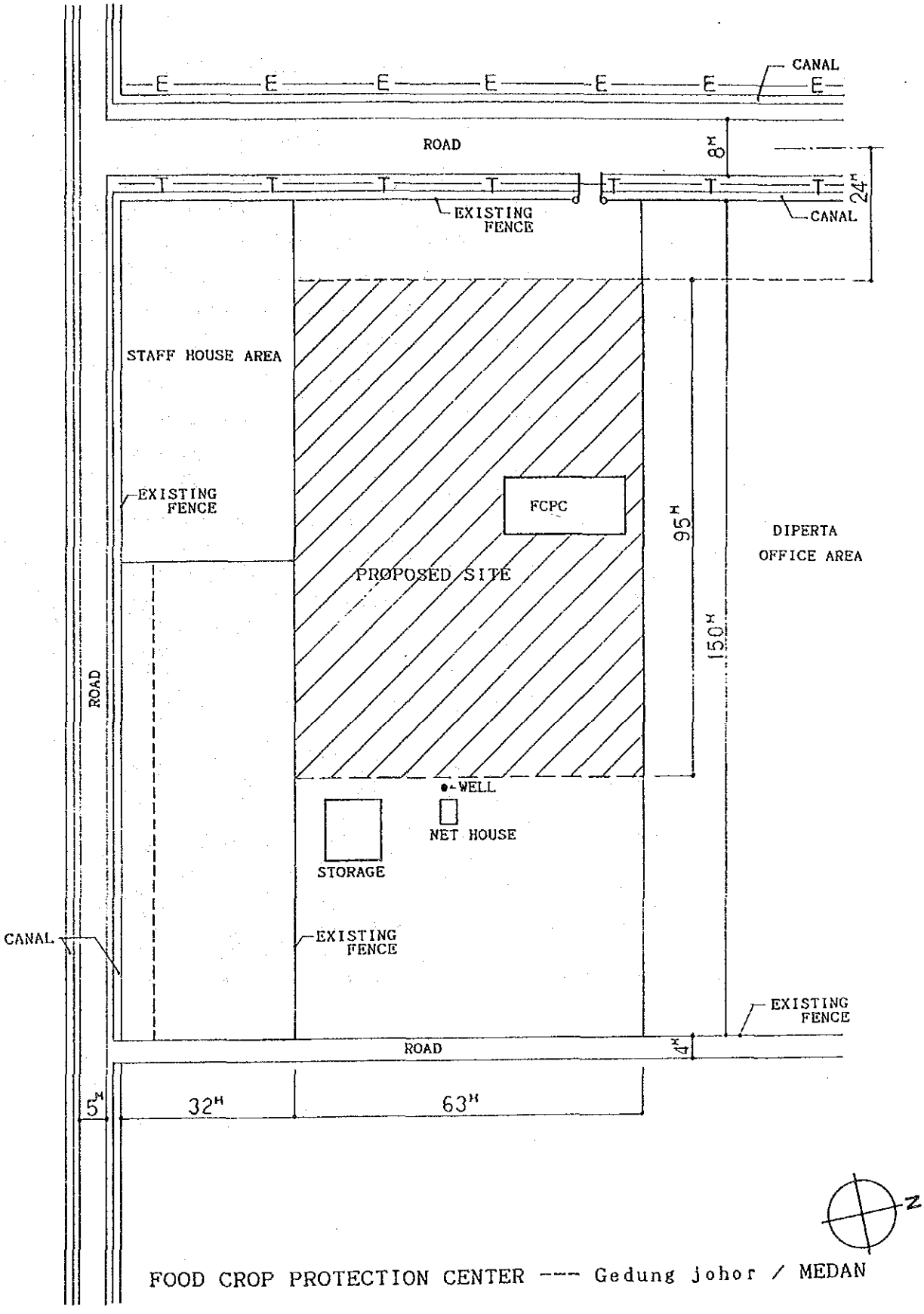
2) MEDAN, North Sumatera

(a) Present Condition of Construction Site

The proposed construction site is located about 5 km from the Medan City center. It takes about two hours by air from Jakarta to Medan.

A facility of the Province Food Crop Agriculture Extension Service stands on the north part of the site in addition to the existing FCPC. The 8-meter road in front of the site is good and adequate. There are plans for widening this road, and the boundary of the site will be moved back to 24 meters from the road center. The site itself is a grassy area, but a landfill of about 60 cm is needed to bring the floor level of the new building to the same height as in existing buildings.

The access road to the site requires crossing over an open ditch approx. 2 m wide, for which construction of a bridge is requested.



FOOD CROP PROTECTION CENTER --- Gedung Johor / MEDAN

SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

(b) Related Infrastructure

a) Electric Power

At present, power is being supplied to the existing FCPC from the power-transmission line running along with the road on the west side of the building, and no problem is foreseen for the proposed
facility. Power supply will be 220V/50Hz.

b) Telephone

A telephone cable passes along the west boundary of the proposed site. It is possible to run a line into the site from this cable.

c) Water Supply

City water is not available. It will be necessary to dig wells.

d) Drainage

Sewage ducts do not exist. Sewage must be treated in sewage tanks and returned to the earth through seepage sumps.

Rain water will be collected in drainage canals around the building and discharged into the surrounding paddy fields.

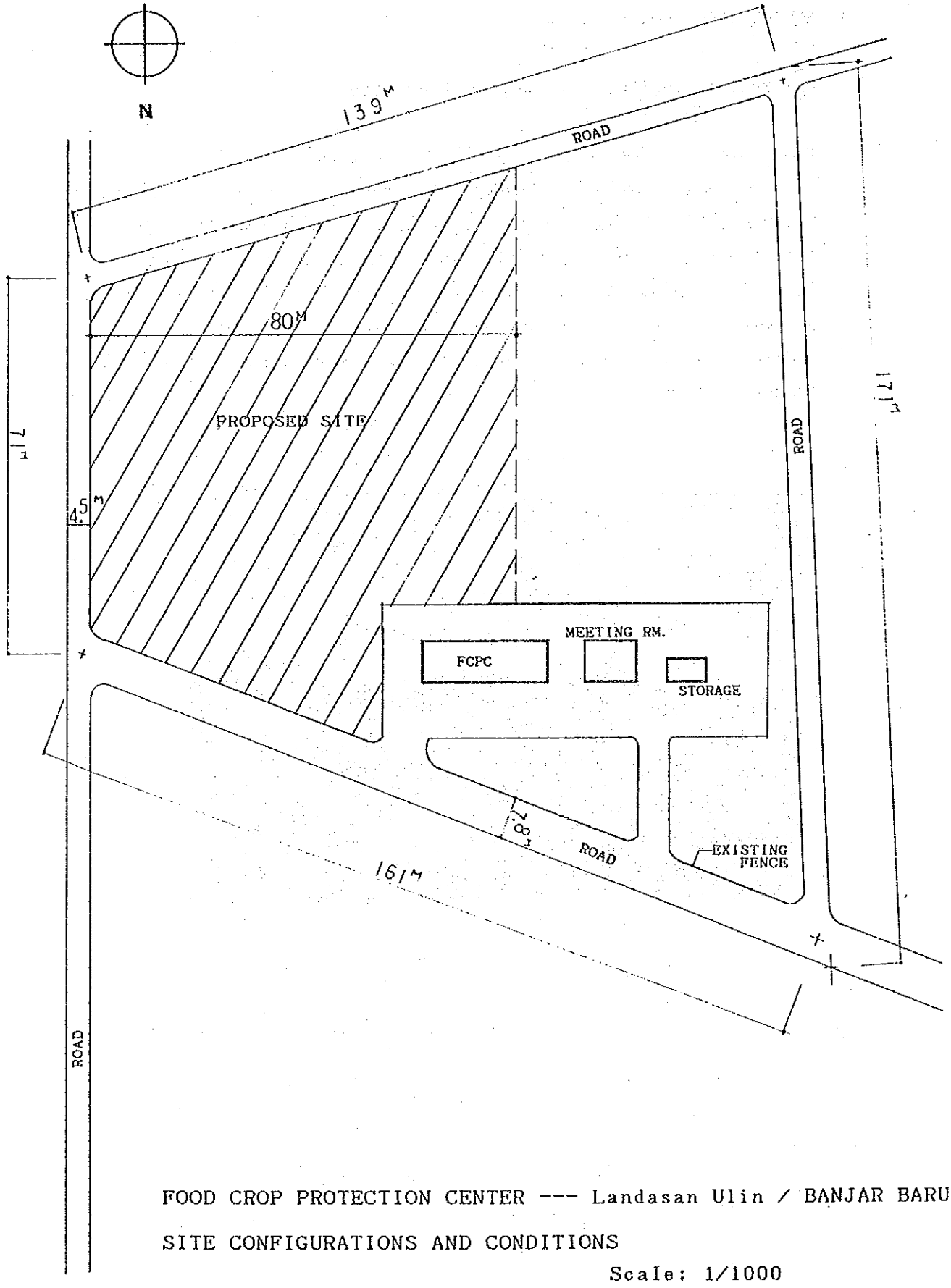
e) Gas

City gas is not available. A propane gas supply system must be installed.

3) BANJAR BARU, South Kalimantan

(a) Present Condition of Construction Site

The proposed Banjar Baru site is located about 30 km east of the town of Banjar Masin. A 4-meter road runs around the four sides of the plot. On the site, there presently stands a 200 m^2 single-story building housing the FCPC and an 80 m^2 conference room. There is no problem regarding ownership of the land. Land for this project has been secured on the north side of the present FCPC. A 400-meter paved roadway is planned from the main road to the construction site.



FOOD CROP PROTECTION CENTER --- Landasan Ulin / BANJAR BARU

SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

(b) Related Infrastructure

a) Electric Power

At present, power is being supplied to the existing FCPC from the power line on the front road. Since there exist overhead power-transmission lines along the front road, it will be possible to be supplied from these lines. Power supply will be 220V/50Hz.

b) Telephone

There are no telephone lines on the site at preset, but a telephone cable passes at a distance of 500 m from the site. It is possible to run a line into the site from this cable.

c) Water Supply

City water is not available. It will be necessary to dig wells.

d) Drainage

Sewage ducts do not exist. Human waste must be collected in sewage tanks for collection by vacuum tank trucks once a year.

Rain water will be collected in drainage canals around the building and discharged into adjoining ditches.

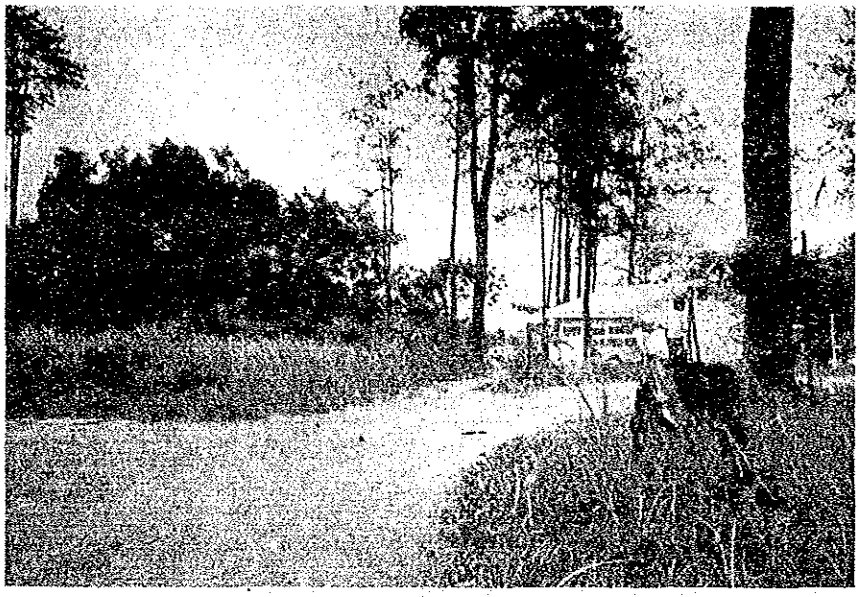
e) Gas

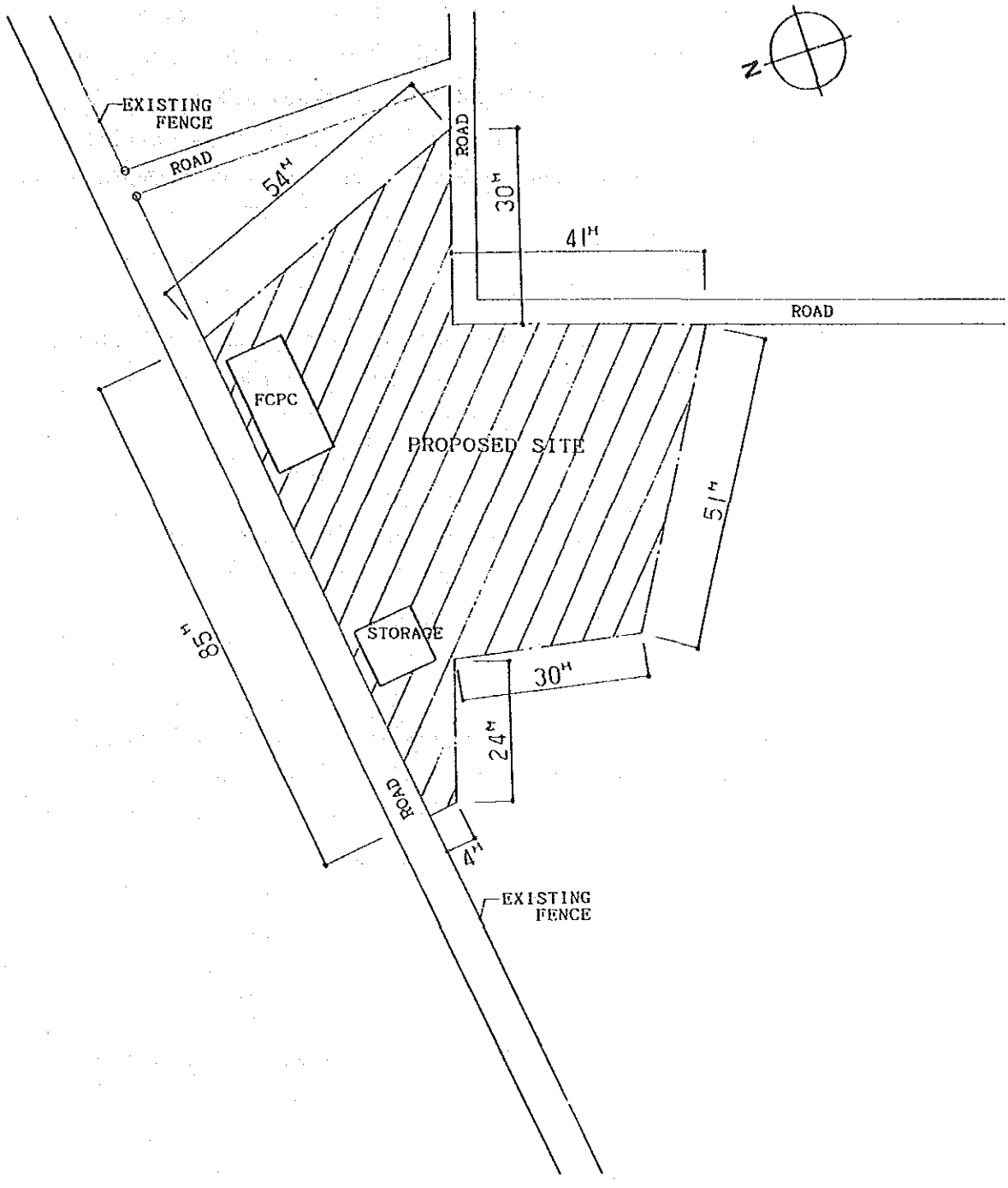
City gas is not available. A propane gas supply system must be installed.

4) PALEMBANG, South Sumatera

(a) Present Condition of Construction Site

PALEMBANG FCPC site is situated within the Palembang City limits, but due to the existing FCPC building, it is difficult to properly locate the new facility within the present grounds. Extra land obtained for the Project is a scrub forest with an about 4-meter incline requiring land leveling and boring operations. Regarding land ownership, there is no problem as the land is owned by a government office and permission has already been obtained.





FOOD CROP PROTECTION CENTER --- PALEMBANG

SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

(b) Related Infrastructure

a) Electric Power

At present, power is being supplied to the existing FCPC from the power line on the front road. Since there exist overhead power-transmission lines along the front road, it is possible to be supplied from these lines. Power supply will be 220V/50Hz.

b) Telephone

At present, an inter-city telephone is provided in the building. It is possible to run an additional line into the site.

c) Water Supply

Although water supply ducts are available, water is not supplied. It will be necessary to dig wells.

d) Drainage

Sewage ducts do not exist. Sewage must be treated in sewage tanks and returned to the earth through seepage sumps.

Rain water will be collected in drainage canals around the building and discharged into adjoining ditches.

e) Gas

City gas is not available. A propane gas supply system must be installed.

(2) Field Laboratories (FL)

Under the present Project, FL are planned for construction at eleven (11) locations (two in South Sulawesi, two in North Sumatera, two in South Kalimantan, two in D.I. Aceh, two in Lampung, and one in South Sumatera), all 20 requested FL sites having been surveyed.

1) South Sulawesi
   - Waleurang*, LUWU
   - Lappariaya*, BONE
   - Bulukumba, BULUKUMBA

2) North Sumatera
   - Tanjung Morawa*, DELISERDANG
   - Bandar*, SIMALUNGUN
   - Huta Holbung, TAPANULI SELATAN
   - Indrapura, ASAHAN
   - Hutaraja, TAPANULI UTARA

3) South Kalimantan
   - Sungai Tabuk*, BANJAR
   - Sungai Raya*, HULU SUNGAI SELATAN
   - Alabio, HULU SUNGAI UTARA

4) D.I. Aceh
   - Keumala*, PIDIE
   - Peureulak*, ACHE TIMUR
   - Babussalam, ACEH TENGGARA
   - Kuala, ACEH BARAT

5) Lampung
   - Alung Selatan*, LAMPUNG UTARA
   - Gadingrejo*, LAMPUNG SELATAN

6) South Sumatera
   - Pulau Pinang, LAHAT
   - Belitang*, OKU (OGAN KOMERING ULU)
   - Perwakian Makarti Jaya, MUSI BAYUASIN

NOTE: * Sites involved in the construction plan.

Among eleven (11) FL in the construction plan, four (4) FL are to be A-type with a Vertebrate Laboratory and another four (4) FL are to be B-Type with a Biological Laboratory. They are as follows:

1) South Sulawesi
   LUWU FL - A-Type FL
   BONE FL - B-Type FL

2) North Sumatera
   DELI SERDANG FL - A-Type FL
   SIMALUNGUN FL - B-Type FL

3) South Kalimantan
   BANJAR FL - A-Type FL

4) D.I. Aceh
   PIDIE FL - B-Type FL

5) Lampung
   LAMPUNG UTARA FL - A-Type FL

6) South Sumatera
   OKU FL - B-Type FL

Among the eleven (11) sites for the FL in the construction plan, the following sites require bridge construction on the access road, removal of obstacles and/or filling.

1) Bridge Construction
   SIMALUNGUN FL
   BANJAR FL
   HULU SUNGAI SELATAN FL
   PIDIE FL
   ACEH TIMUR FL
   LAMPUNG UTARA FL
   LAMPUNG SELATAN FL

2) Removal of Obstacles

SIMALUNGUN FL

BANJAR FL

LAMPUNG UTARA FL

3) Filling

DELISERDANG FL (0.5 m)

SIMALUNGUN FL (0.5 m)

BONE FL (0.5 m)

BANJAR FL (1.5 m)

HULU SUNGAI SELATAN FL (1.5 m)

PIDIE FL (0.5 m)

ACEH TIMUR (0.5 m)

LAMPUNG SELATAN FL (1.0 m)

Proposed FL sites where power supply will not be available even in the future are as follows:

LUWU FL

ASAHAN FL

PIDIE FL

ACEH TIMUR FL

ACEH TENGGARA FL

ACEH BARAT FL

LAMPUNG UTARA FL

LAMPUNG SELATAN FL

LAHAT FL

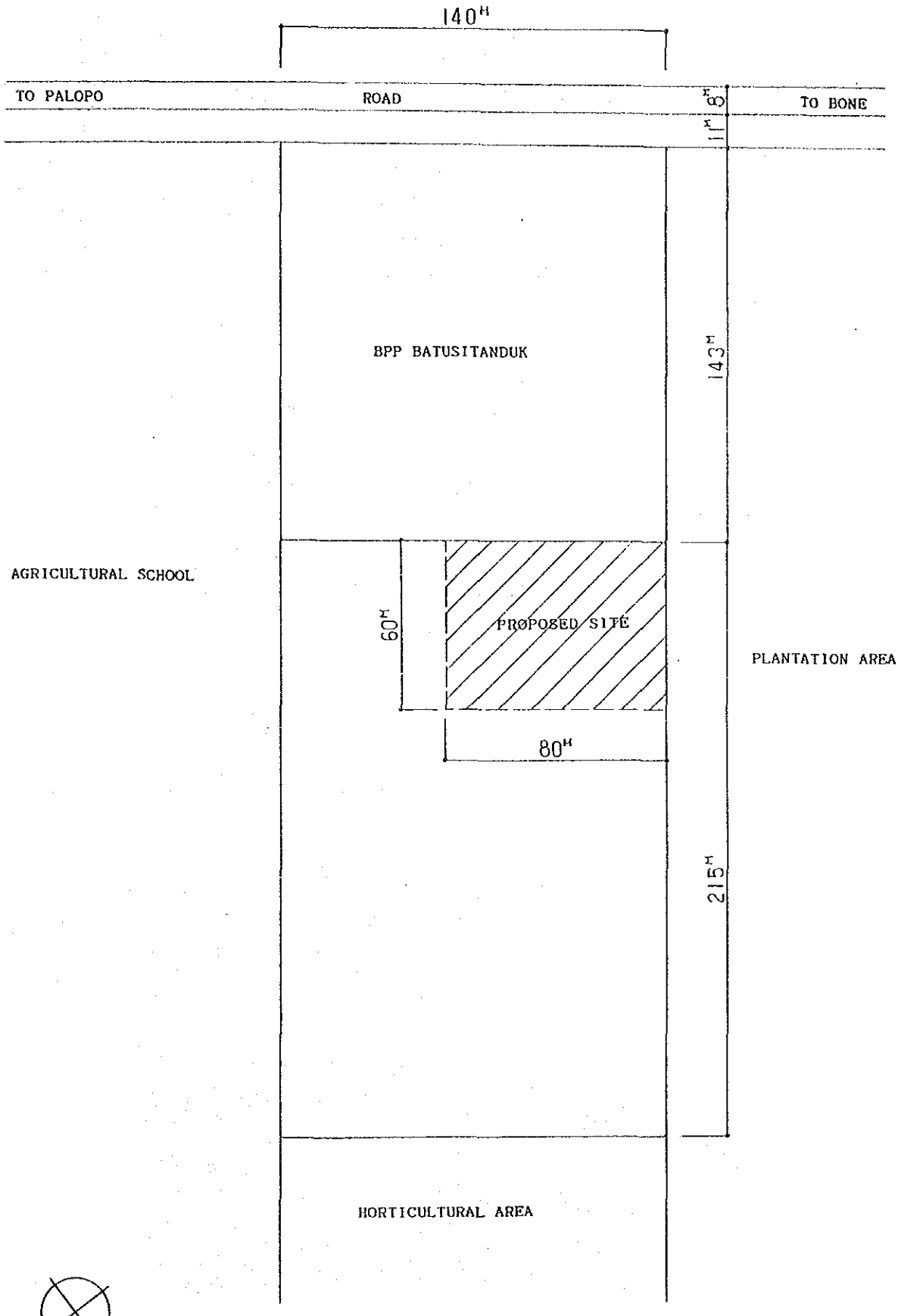
OKU FL

MUSI BANYUASIN FL

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

South Sulawesi

LOCATION	Waleurang/LUWU
CONDITIONS OF SITE	Grassy Plain Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	30,000 m^2
FOR RICE FIELD	130,000 m^2
PRESENT GROUND HEIGHT	Approx. 1.6 m lower than access road
EARTH FILLING	Not necessary
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	Vocational School
OBSTRUCTIONS	None
OTHERS	Construction of an access way to the site from the access road is necessary



FIELD LABORATORY --- Waleurang / LUWU

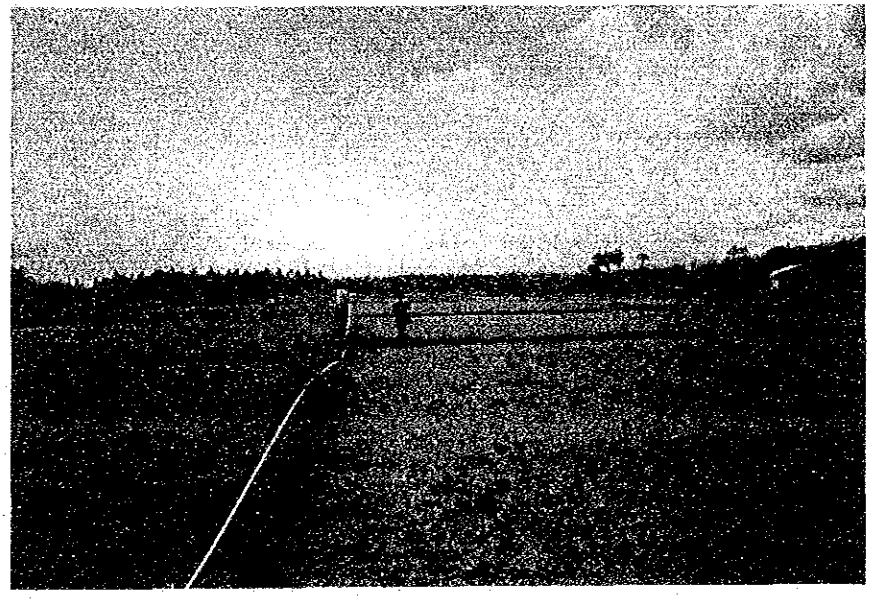
SITE CONFIGURATIONS AND CONDITIONS

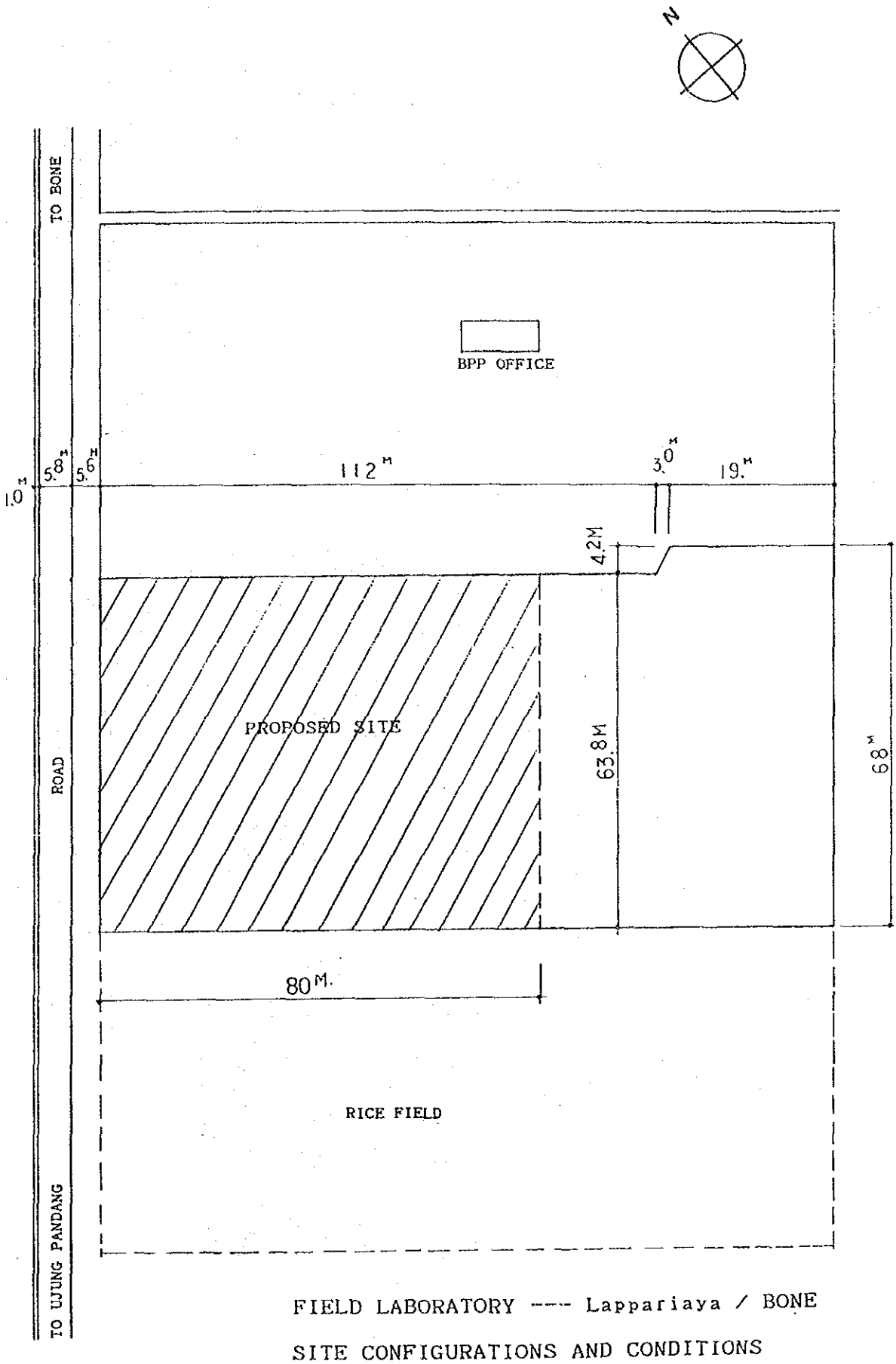
Scale: 1/2000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

South Sulawesi

LOCATION	Lappariaya/BONE
CONDITIONS OF SITE	Grassy Plain Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	5,600 m^2
FOR RICE FIELD	30,000 m^2
PRESENT GROUND HEIGHT	0.5 m lower than the access road
EARTH FILLING	Required, 0.5 m - 1.0 m deep
INFRASTRUCTURE	
ELECTRIC POWER	Available, 1 phase - 220V/50Hz
WATER SUPPLY	Well boring required
TELEPHONE	Not available
EXISTING BUILDING	BPP
OBSTRUCTIONS	None
OTHERS	None





FIELD LABORATORY ---- Lappariaya / BONE

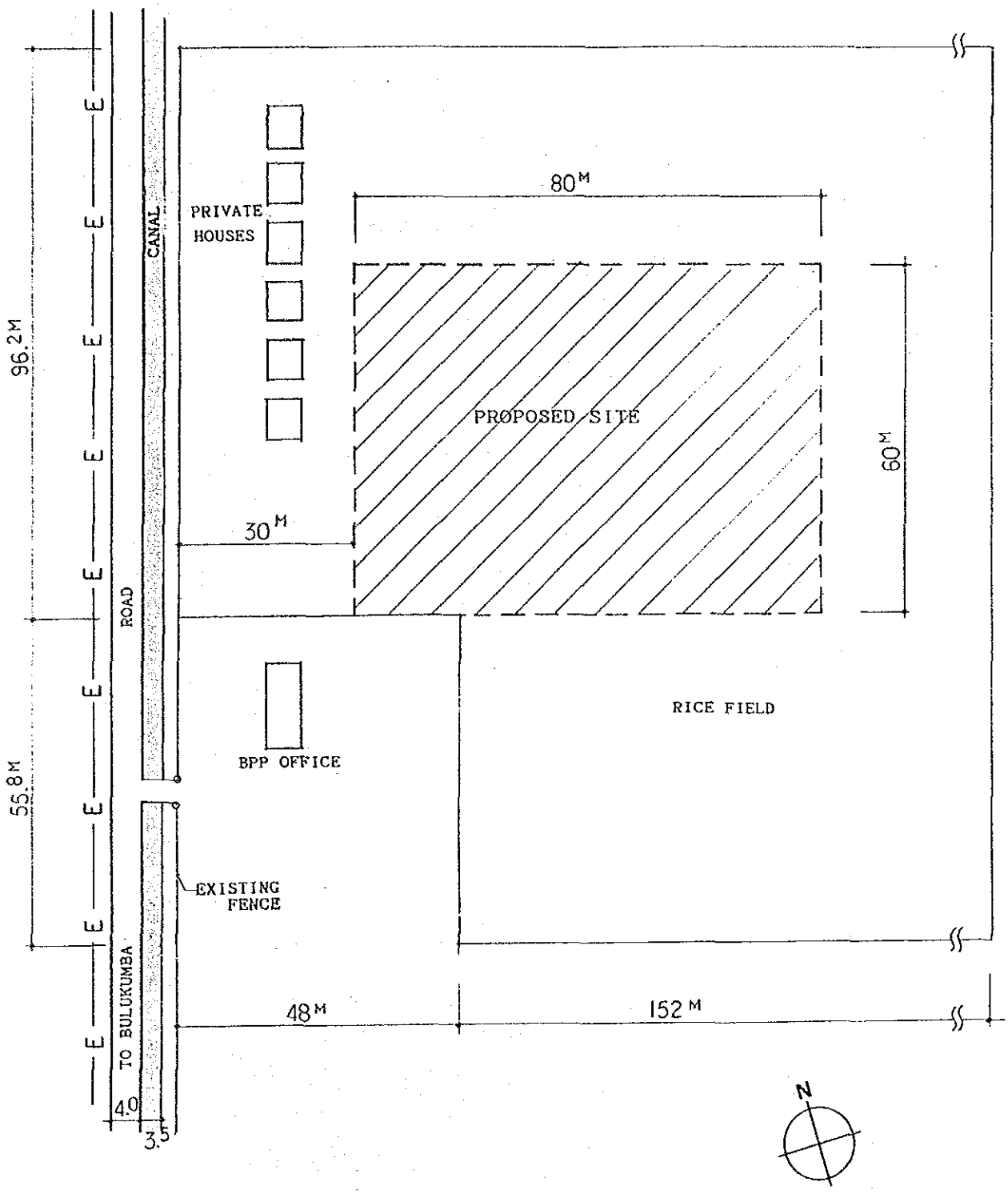
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

South Sulawesi

LOCATION	Bulukumba/BULUKUMBA
CONDITIONS OF SITE	Farm
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	5,000 m^2
FOR RICE FIELD	20,000 m^2
PRESENT GROUND HEIGHT	1.0 m lower than the access road
EARTH FILLING	Required, 1.0 m deep
INFRASTRUCTURE	
ELECTRIC POWER	Available, 1 phase 220V/50Hz
WATER SUPPLY	Well boring required
TELEPHONE	Not available
EXISTING BUILDING	BPP
OBSTRUCTIONS	House for personnel
OTHERS	Open ditches for sewage provided



FIELD LABORATORY --- Bulukumba / BULUKUMBA

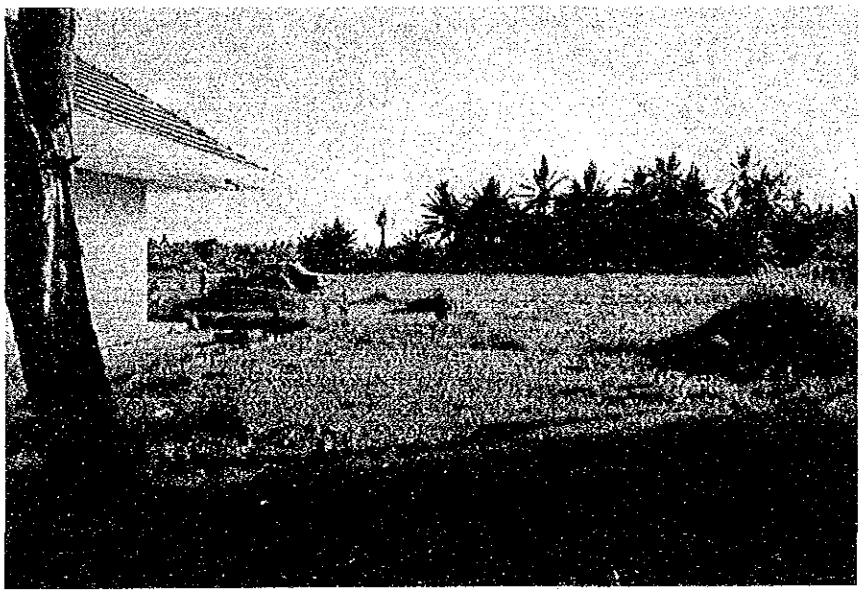
SITE CONFIGURATIONS AND CONDITIONS

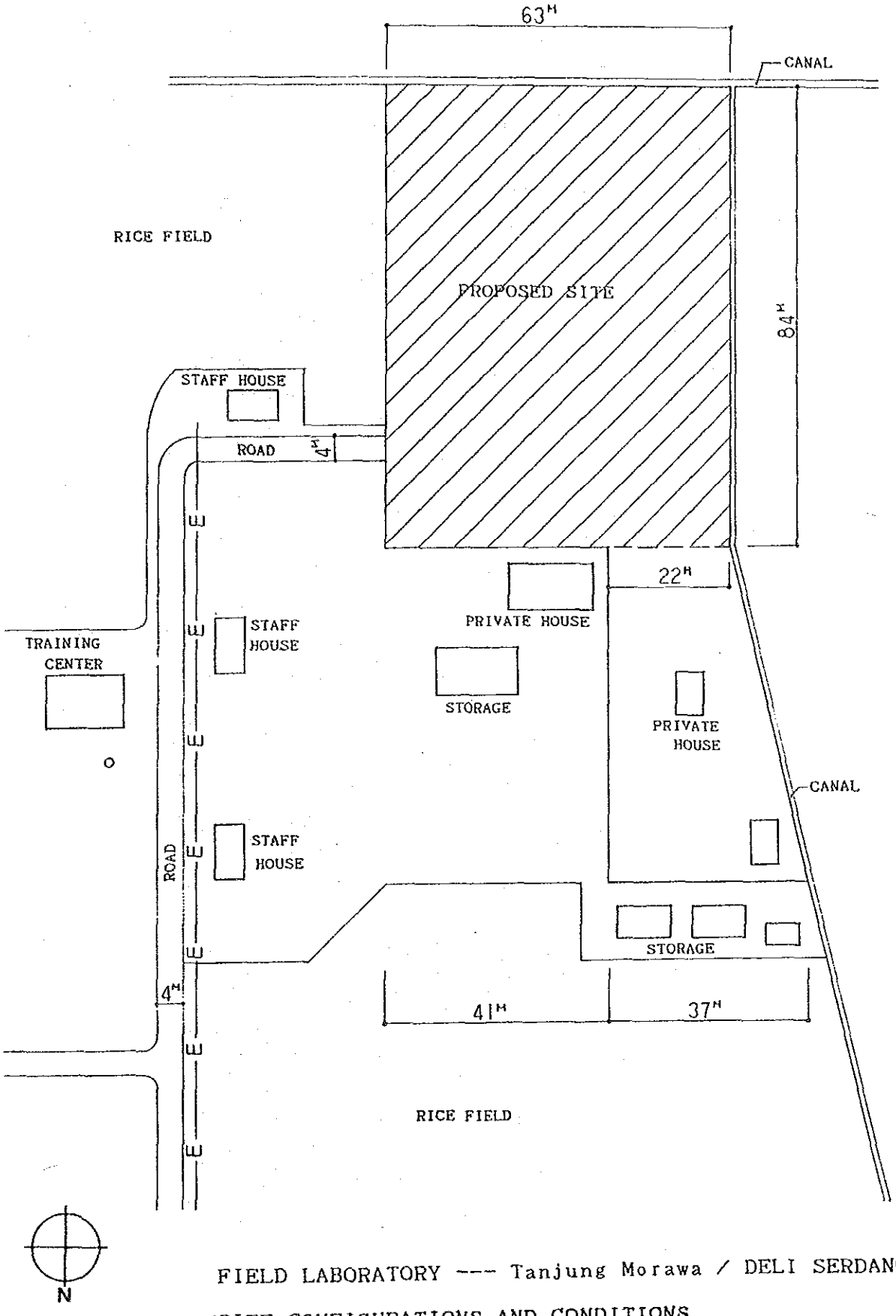
Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

North Sumatera

LOCATION	Tanjung Morawa/DELISERDANG
CONDITIONS OF SITE	Rice Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	5,300 m^2
FOR RICE FIELD	18,000 m^2
PRESENT GROUND HEIGHT	Approx. 1.0 m lower than the access road
EARTH FILLING	Required, 5,000 m^3
INFRASTRUCTURE	
ELECTRIC POWER	Available, 1 phase 220V/50Hz
WATER SUPPLY	Existing well available
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	Office, houses, storages
OBSTRUCTIONS	None
OTHERS	None





FIELD LABORATORY --- Tanjung Morawa / DELI SERDANG

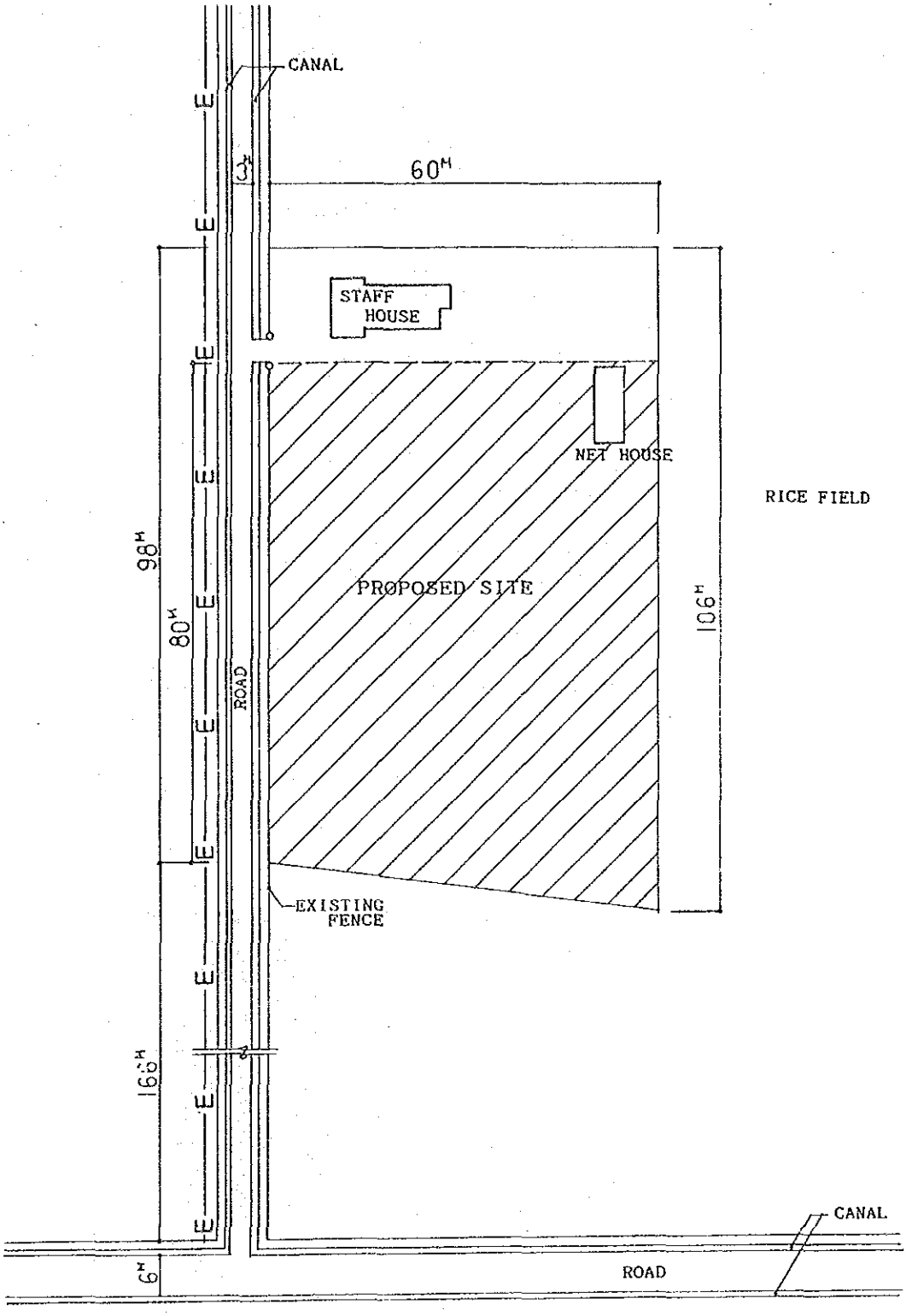
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

North Sumatera

LOCATION	Bandar/SIMAGUNGUN
CONDITIONS OF SITE	Grassy Plain Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	6,000 m^2
FOR RICE FIELD	25,000 m^2
PRESENT GROUND HEIGHT	Same level of the access road
EARTH FILLING	Not necessary
INFRASTRUCTURE	
ELECTRIC POWER	Can be served, 1 phase 220V/50Hz
WATER SUPPLY	Well boring required
TELEPHONE	Not available
EXISTING BUILDING	Office, Net house
OBSTRUCTIONS	Removal of existing trees and stumps required
OTHERS	Bridge construction required between the site and the access road



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FIELD LABORATORY --- Bandar / SIMALUNGUN

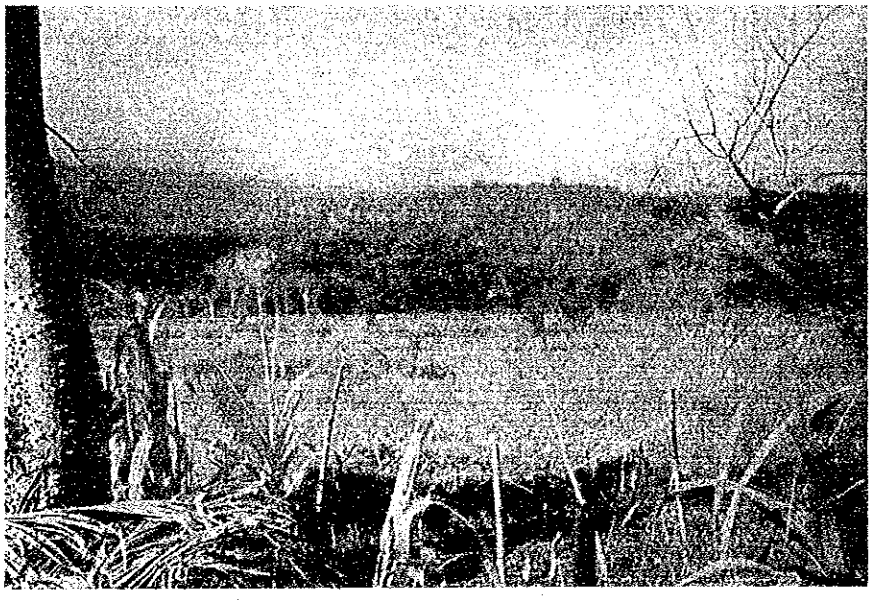
SITE CONFIGURATIONS AND CONDITIONS

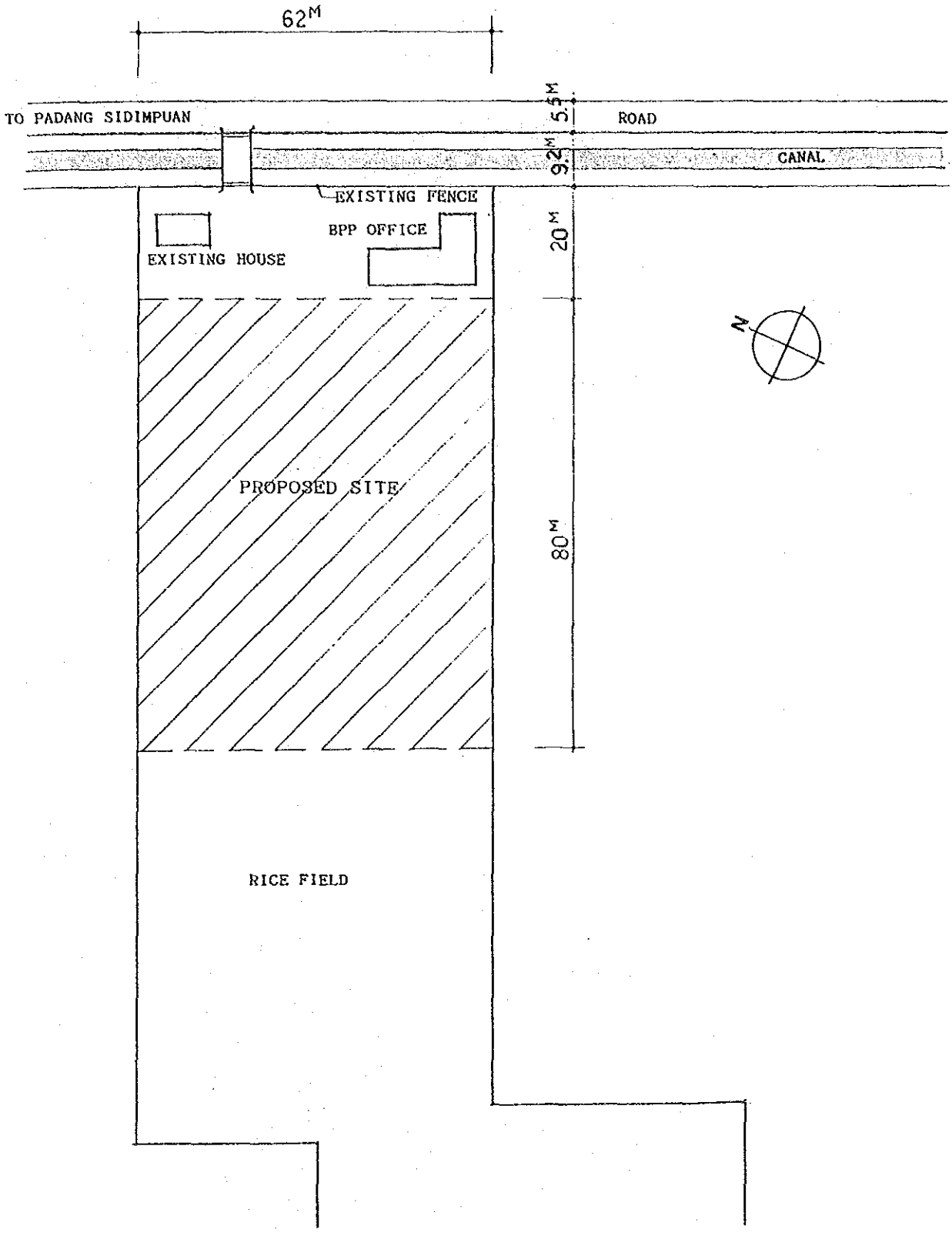
Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

North Sumatera

LOCATION	Huta Holbung/TAPANULI SERATAN
CONDITIONS OF SITE	Farm
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	1,000 m^2
FOR RICE FIELD	30,000 m^2
PRESENT GROUND HEIGHT	1.0 m lower than the access road
EARTH FILLING	Required, 1.0 m deep
INFRASTRUCTURE	
ELECTRIC POWER	Available, 1 phase 220V/50Hz
WATER SUPPLY	Well boring required
TELEPHONE	Not available
EXISTING BUILDING	BPP and houses for personnel
OBSTRUCTIONS	None
OTHERS	None





FIELD LABORATORY --- Huta Holbung / TAPANULI SELATAN

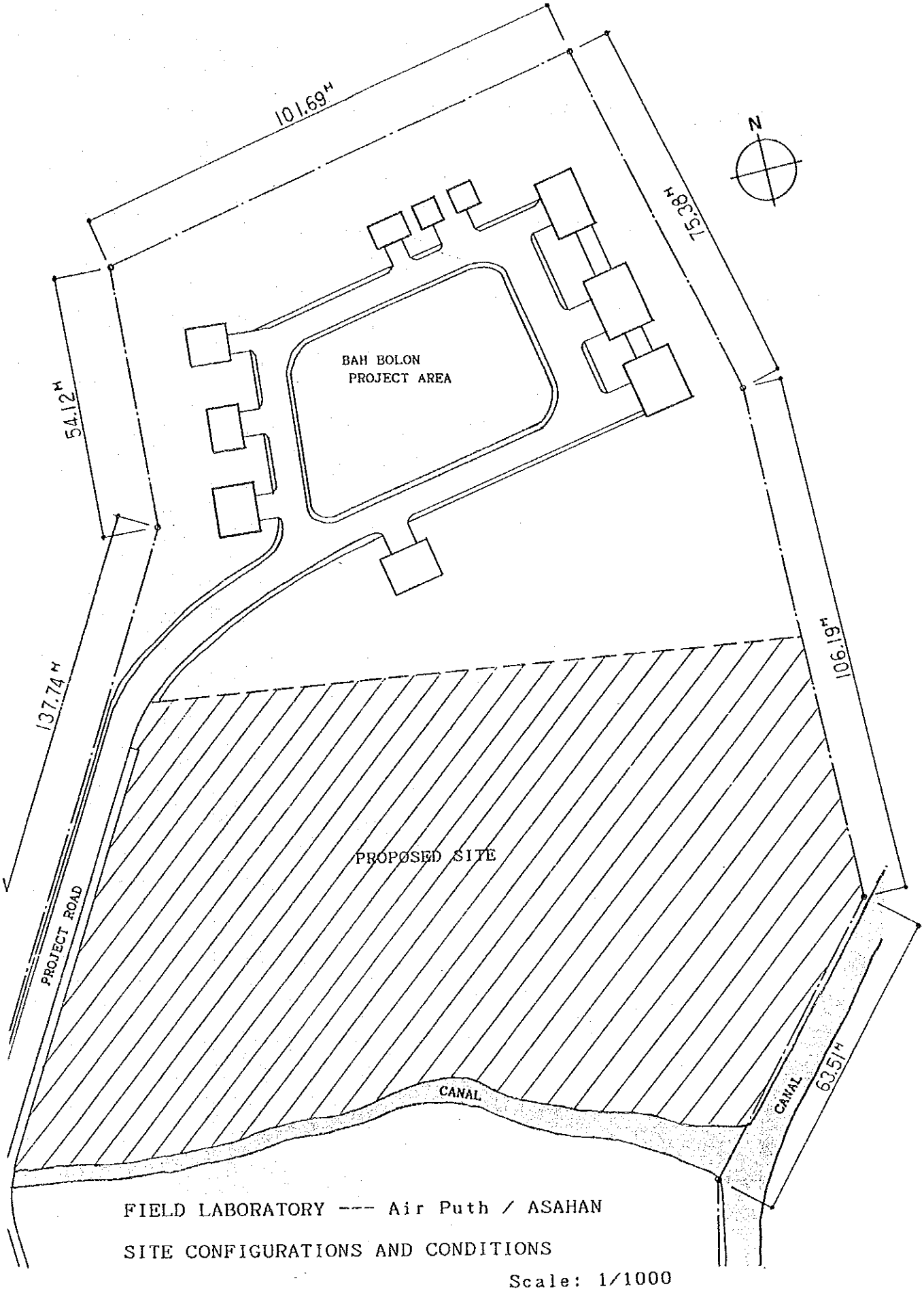
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

North Sumatera

LOCATION	Air Puth/ASAHAN
CONDITIONS OF SITE	Grassy Plain Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	10,000 m^2
FOR RICE FIELD	None
PRESENT GROUND HEIGHT	Same level of access road
EARTH FILLING	Not necessary
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	None
OBSTRUCTIONS	None
OTHERS	At present, BAH BOLON project is under way



FIELD LABORATORY --- Air Puth / ASAHAN

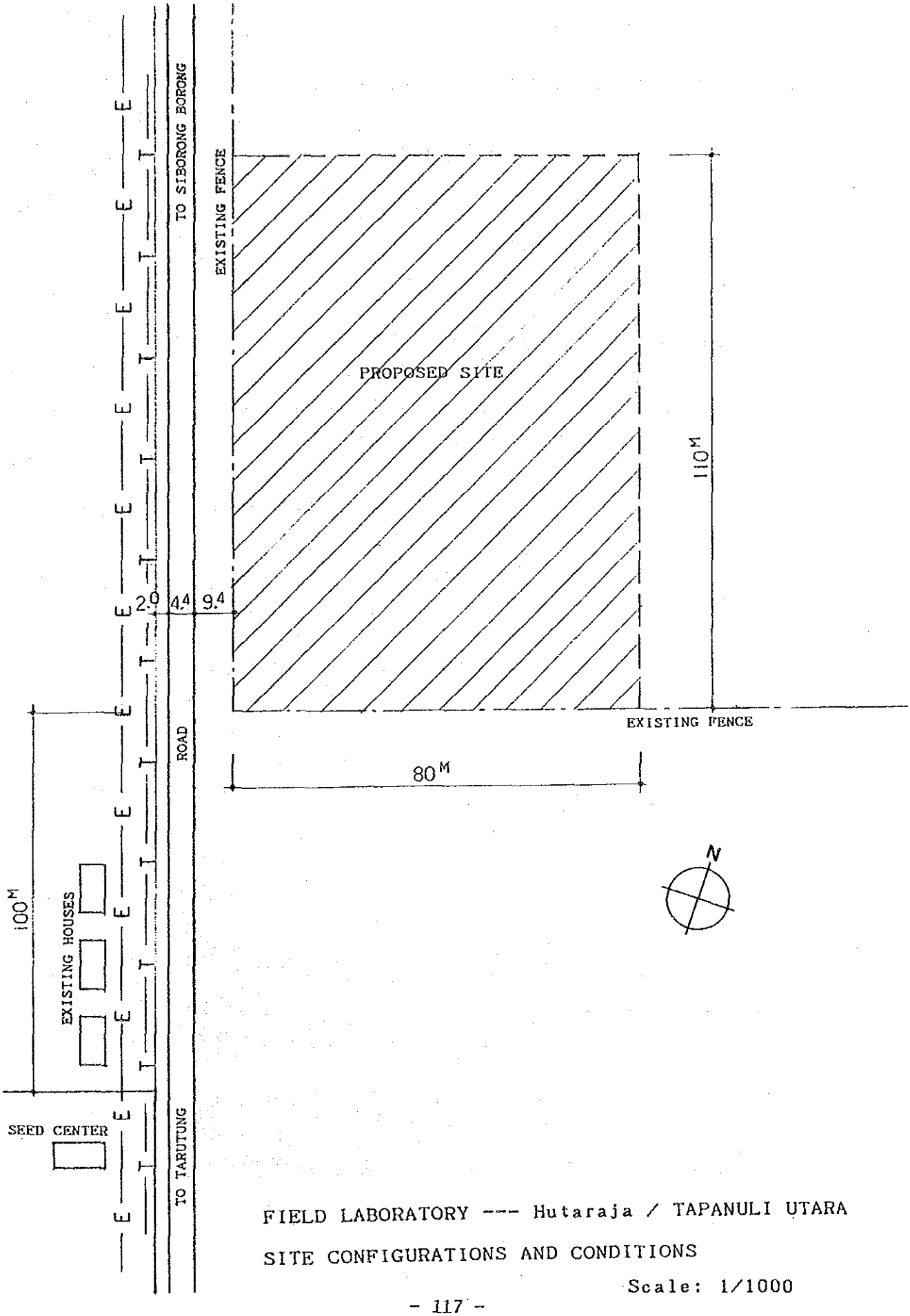
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

North Sumatera

LOCATION	Hutaraja/TAPANULI UTARA
CONDITIONS OF SITE	Grassy Plain Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	6,500 m^2
FOR RICE FIELD	200,000 m^2
PRESENT GROUND HEIGHT	1.5 m - 2.0 m higher than the access road
EARTH FILLING	Leveling required
INFRASTRUCTURE	
ELECTRIC POWER	Available, 1 phase 220V/50Hz
WATER SUPPLY	Well boring required
TELEPHONE	Possible
EXISTING BUILDING	None
OBSTRUCTIONS	None
OTHERS	None



FIELD LABORATORY --- Hutaraja / TAPANULI UTARA

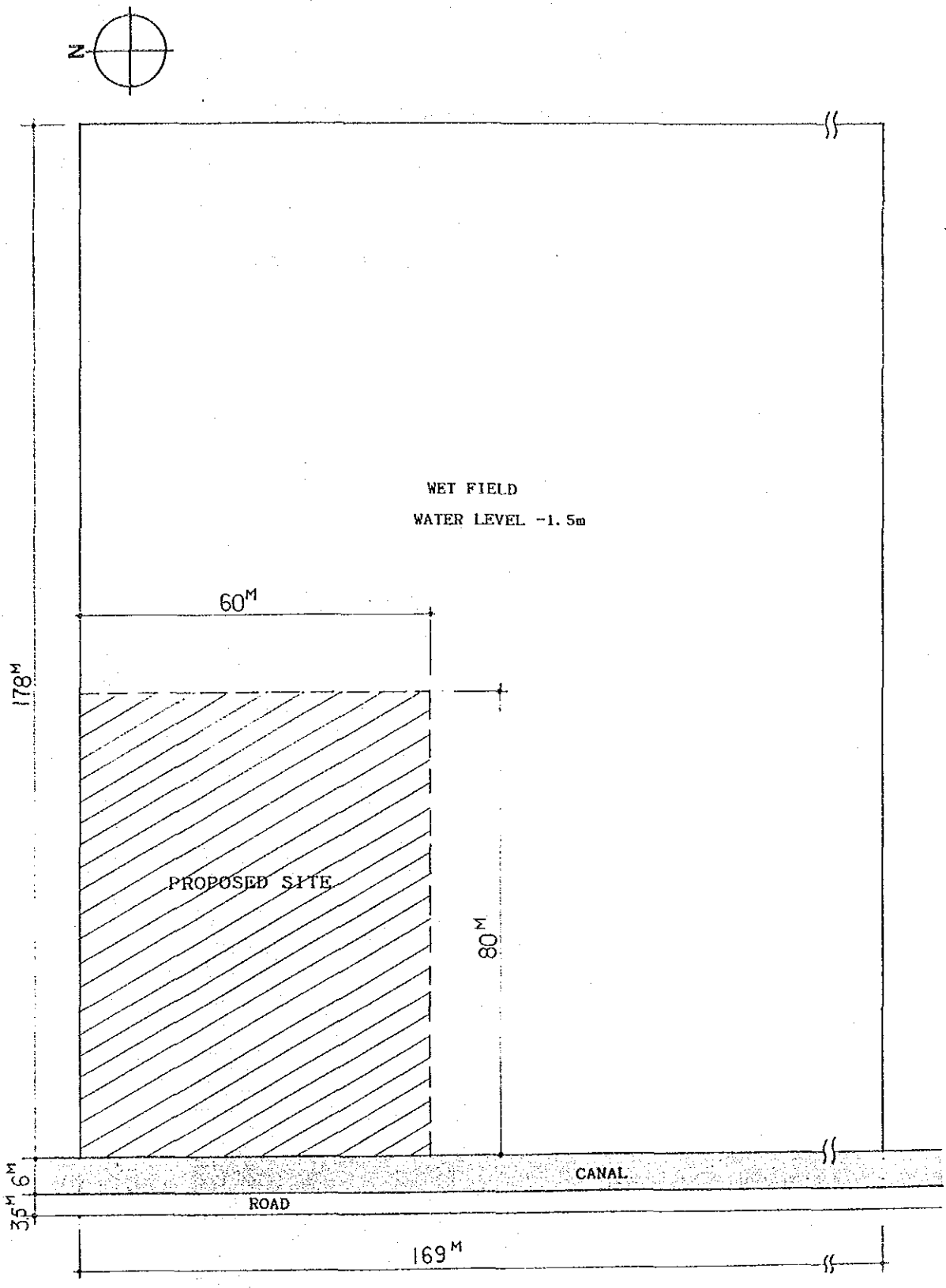
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

South Kalimantan

LOCATION	Sungai Tabuk/BANJAR
CONDITIONS OF SITE	Wet Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	6,400 m^2
FOR RICE FIELD	25,000 m^2
PRESENT GROUND HEIGHT	1.5 m lower than the access road
EARTH FILLING	Required, 2.0 m deep
INFRASTRUCTURE	
ELECTRIC POWER	1 phase 220V/50Hz supplied adjacent to the site
WATER SUPPLY	Well boring required
TELEPHONE	Not available
EXISTING BUILDING	None
OBSTRUCTIONS	None
OTHERS	Bridge construction required for the access road to the site



FIELD LABORATORY ---- Sungai Tabuk / BANJAR

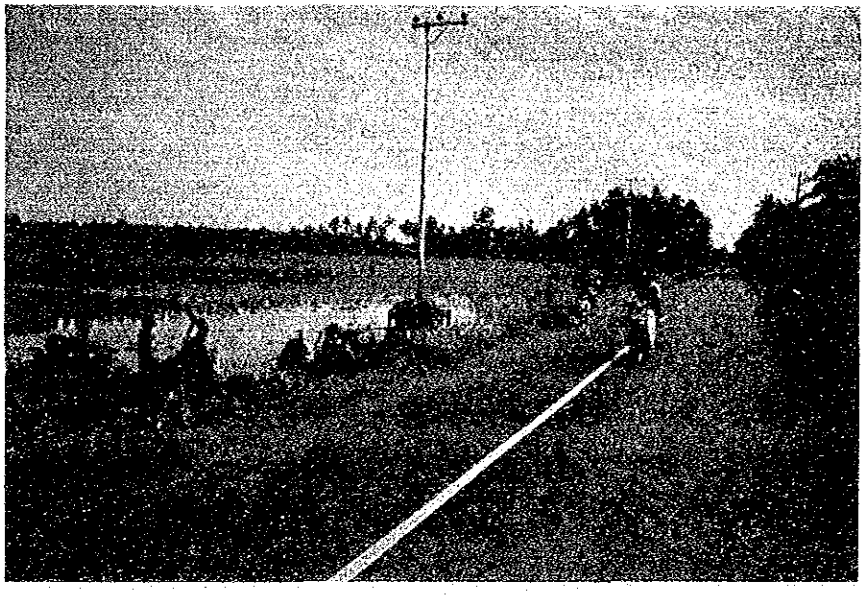
SITE CONFIGURATIONS AND CONDITIONS

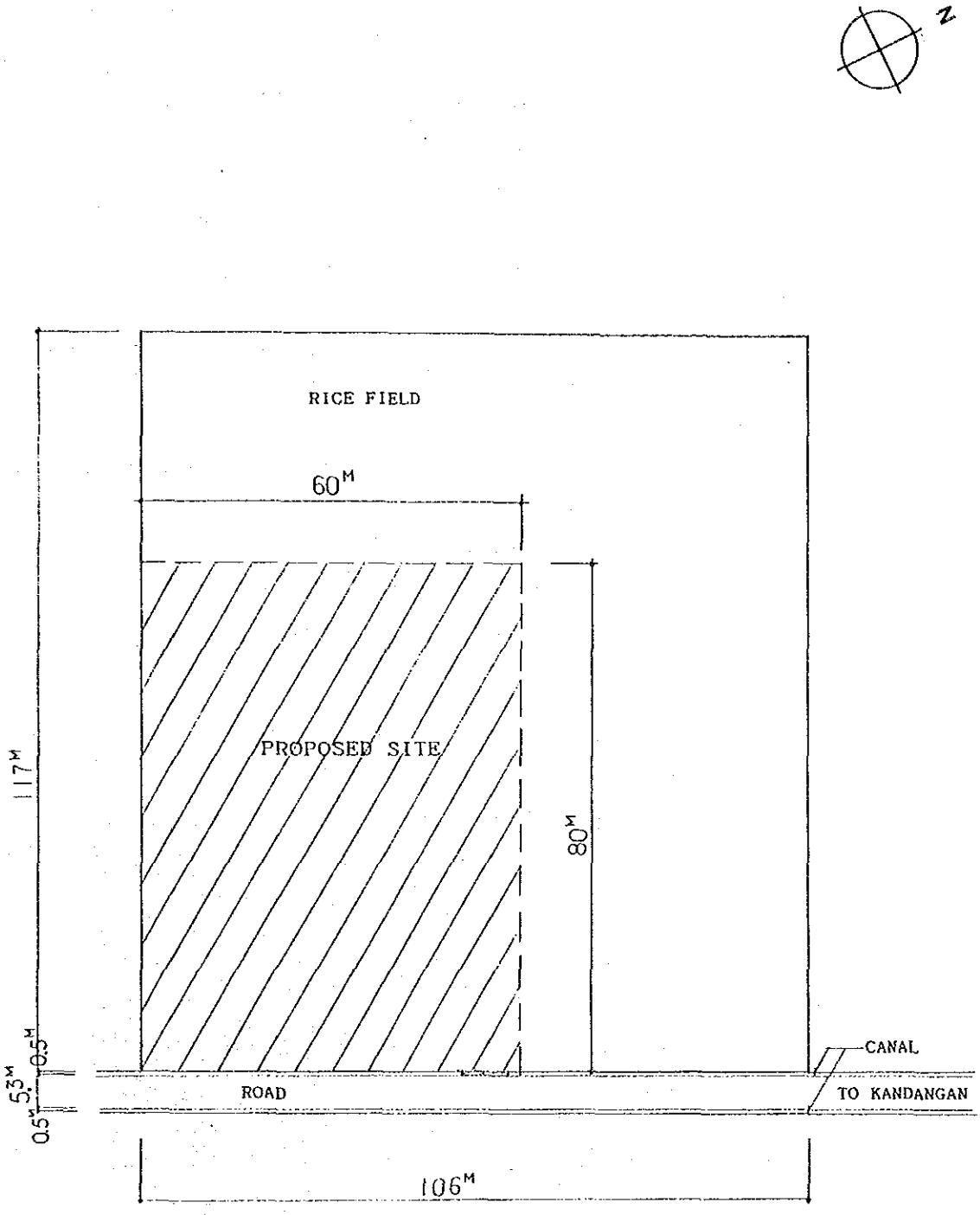
Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

South Kalimantan

LOCATION	Sungai Raya/HULU SUNGAI SELATAN
CONDITIONS OF SITE	Wet Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	10,000 m^2
FOR RICE FIELD	20,000 m^2
PRESENT GROUND HEIGHT	1.0 m - 2.0 m lower than the access road
EARTH FILLING	Required, 1.5 m deep
INFRASTRUCTURE	
ELECTRIC POWER	Available, 1 phase 220V/50Hz
WATER SUPPLY	Well boring required
TELEPHONE	Possible
EXISTING BUILDING	BPP, on the opposite side of the road
OBSTRUCTIONS	None
OTHERS	None





FIELD LABORATORY ---- Sungai Raya / HULU SUNGAI SELATAN

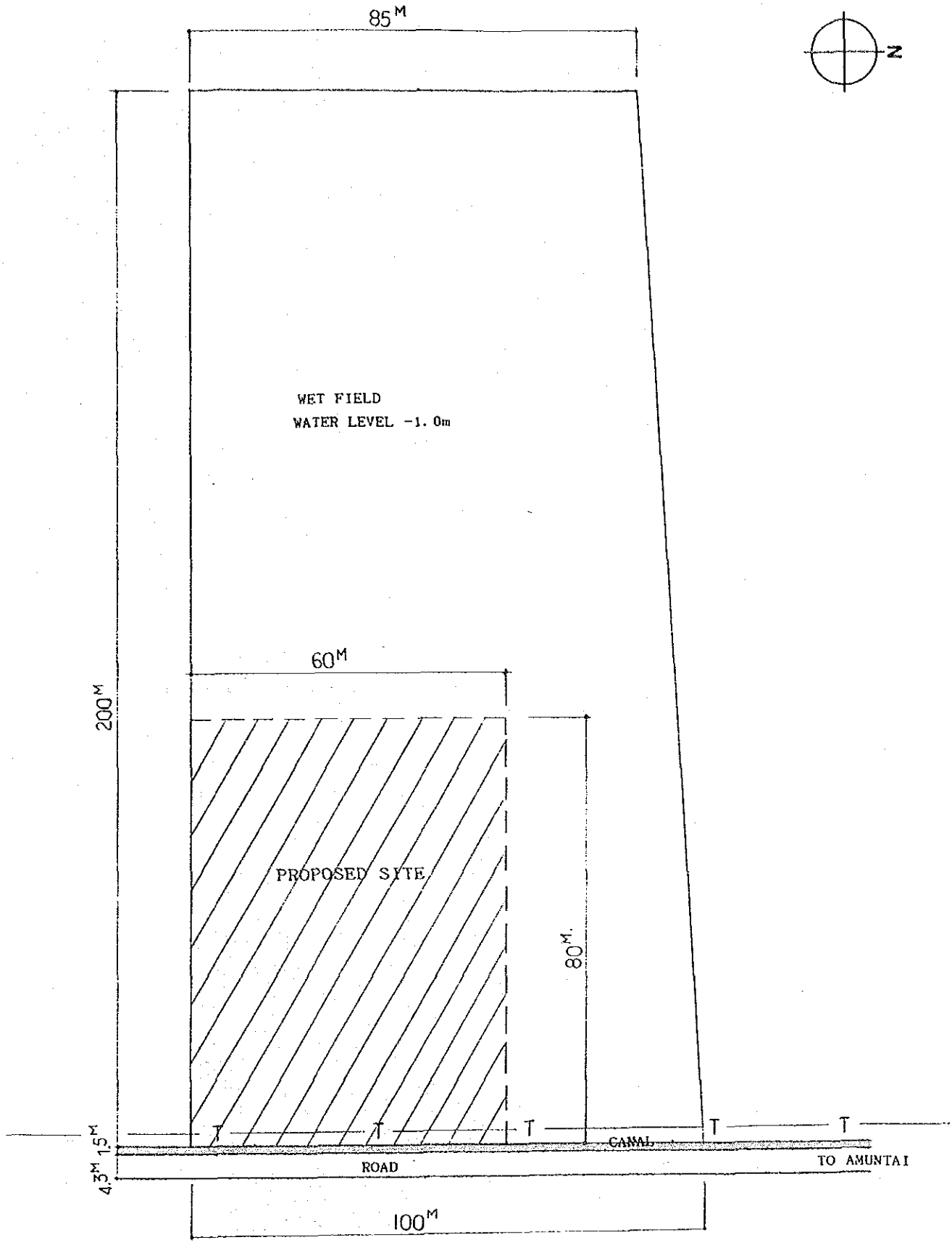
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

South Kalimantan

LOCATION	Alabio/HULU SUNGAI UTARA
CONDITIONS OF SITE	Wet Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	6,000 m^2
FOR RICE FIELD	20,000 m^2
PRESENT GROUND HEIGHT	1.5 m - 2.0 m lower than the access road
EARTH FILLING	Required, 2.0 m deep
INFRASTRUCTURE	
ELECTRIC POWER	1 phase 220V/50Hz supplied as close as 2 km
WATER SUPPLY	Well boring required
TELEPHONE	Possible
EXISTING BUILDING	Houses for personnel
OBSTRUCTIONS	None
OTHERS	River passes near by



FIELD LABORATORY --- Alabio / HULU SUNGAI UTARA

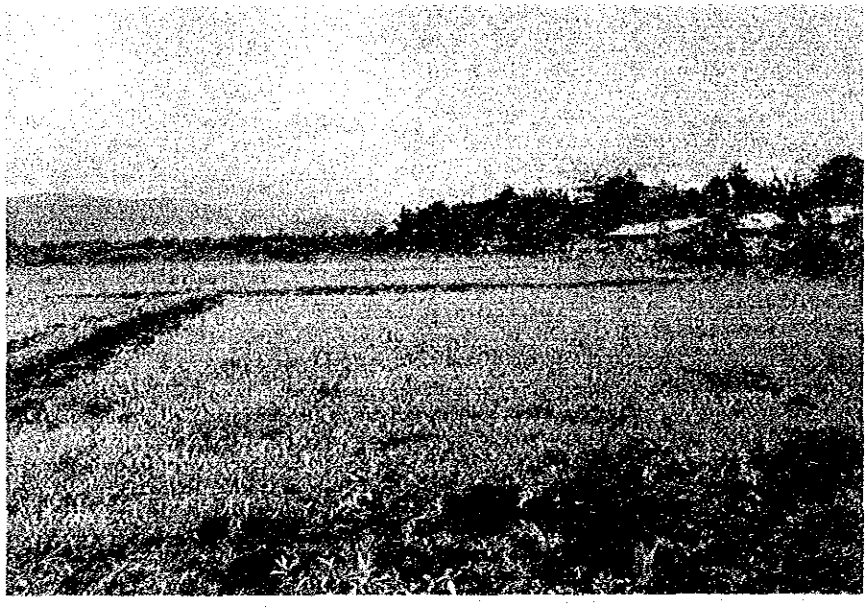
SITE CONFIGURATIONS AND CONDITIONS

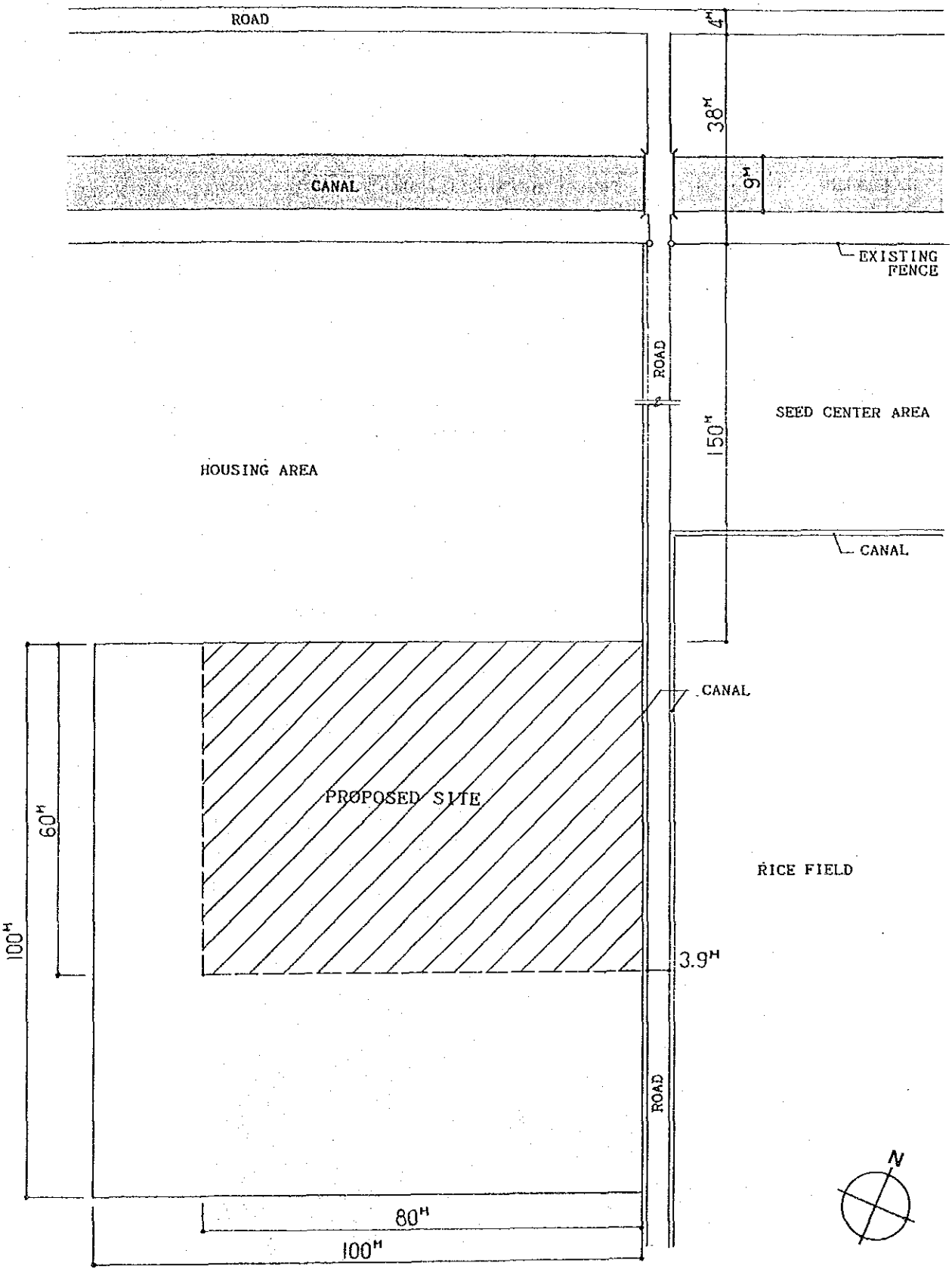
Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

D.I. Aceh

LOCATION	Keumala/PIDIE
CONDITIONS OF SITE	Rice Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	10,000 m^2
FOR RICE FIELD	25,000 m^2
PRESENT GROUND HEIGHT	0.5 m lower than the access road
EARTH FILLING	Required, 5,000 m^3
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	Seed Center and houses
OBSTRUCTIONS	None
OTHERS	Bridge construction required between the site and the access road





FIELD LABORATORY --- Keumala / PIDIE

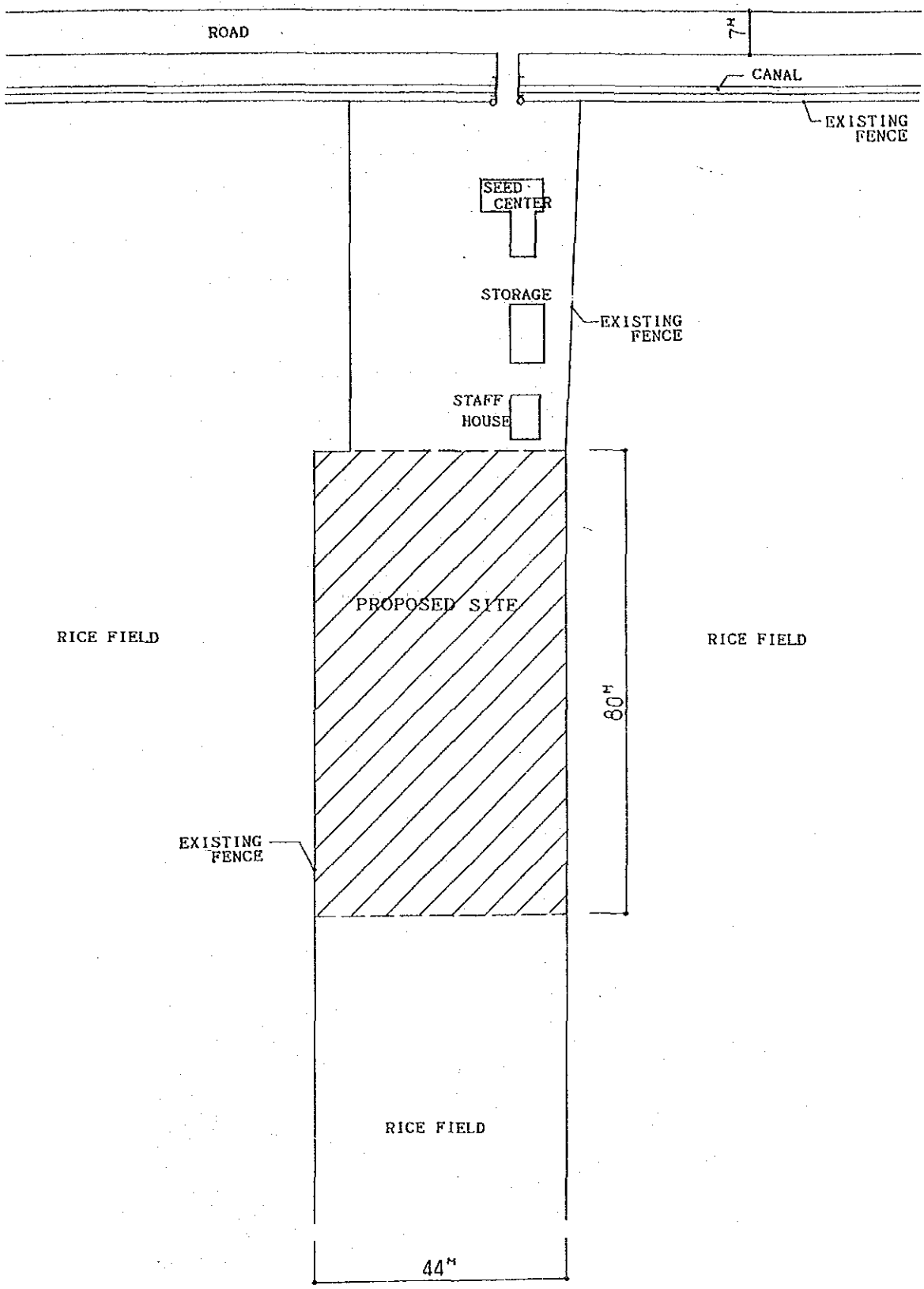
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

D.I. Aceh

LOCATION	Peureulak/ACEH TIMUR
CONDITIONS OF SITE	Rice Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	3,500 m^2
FOR RICE FIELD	25,000 m^2
PRESENT GROUND HEIGHT	Approx. 0.8 m lower than the access road
EARTH FILLING	Required, 5,000 m^3
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	Seed Center, houses and storage
OBSTRUCTIONS	None
OTHERS	Bridge construction required between the site and the access road



FIELD LABORATORY --- Peureulak / ACEH TIMUR

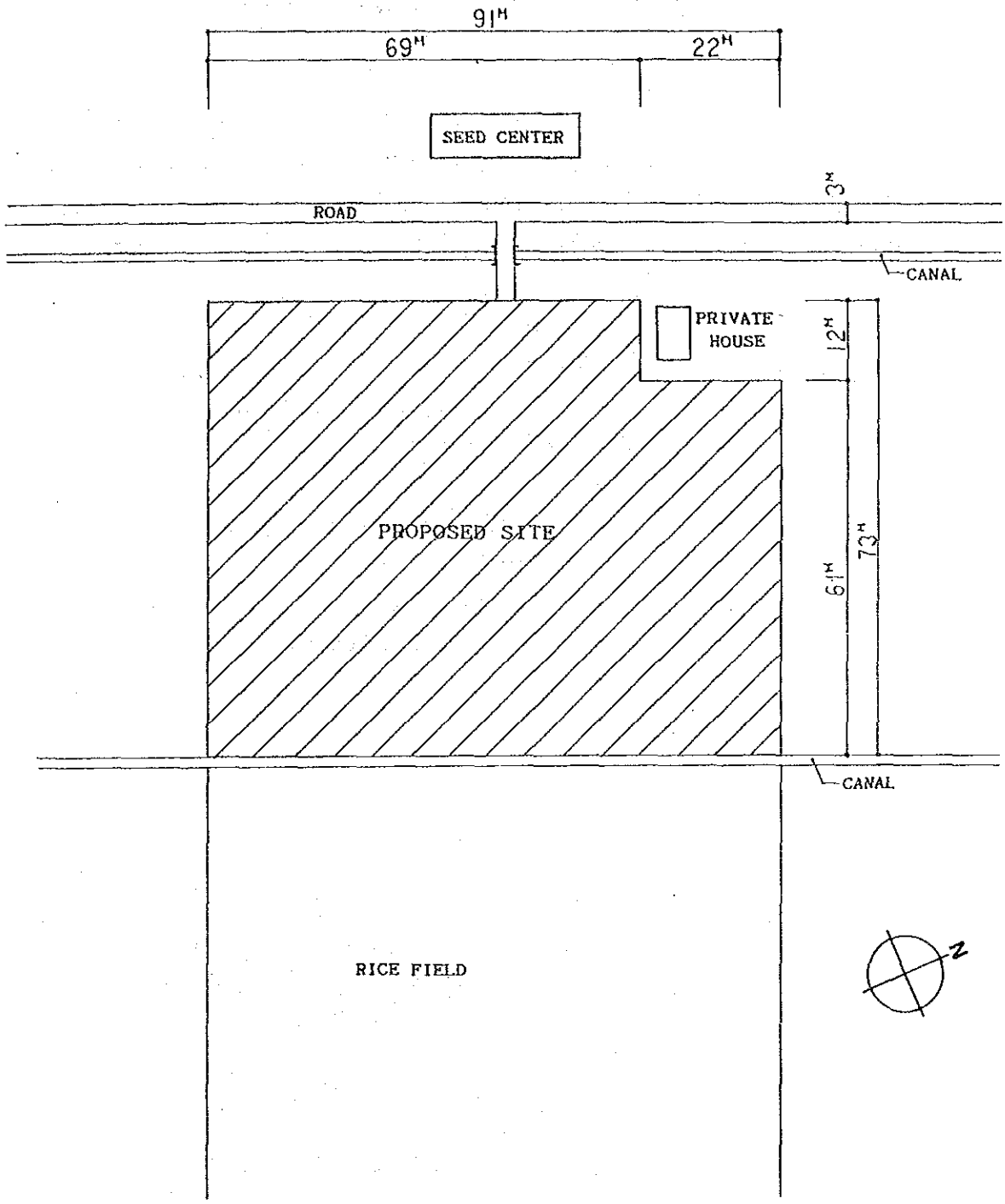
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

D.I. Aceh

LOCATION	Babussalam/ACEH TENGGARA
CONDITIONS OF SITE	Rice Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	6,200 m^2
FOR RICE FIELD	50,000 m^2
PRESENT GROUND HEIGHT	Approx. 1.0 m lower than the access road
EARTH FILLING	Required, 7,000 m^3
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	Seed Center, houses and storage
OBSTRUCTIONS	None
OTHERS	None



FIELD LABORATORY --- Babussalam / ACEH TENGGARA.

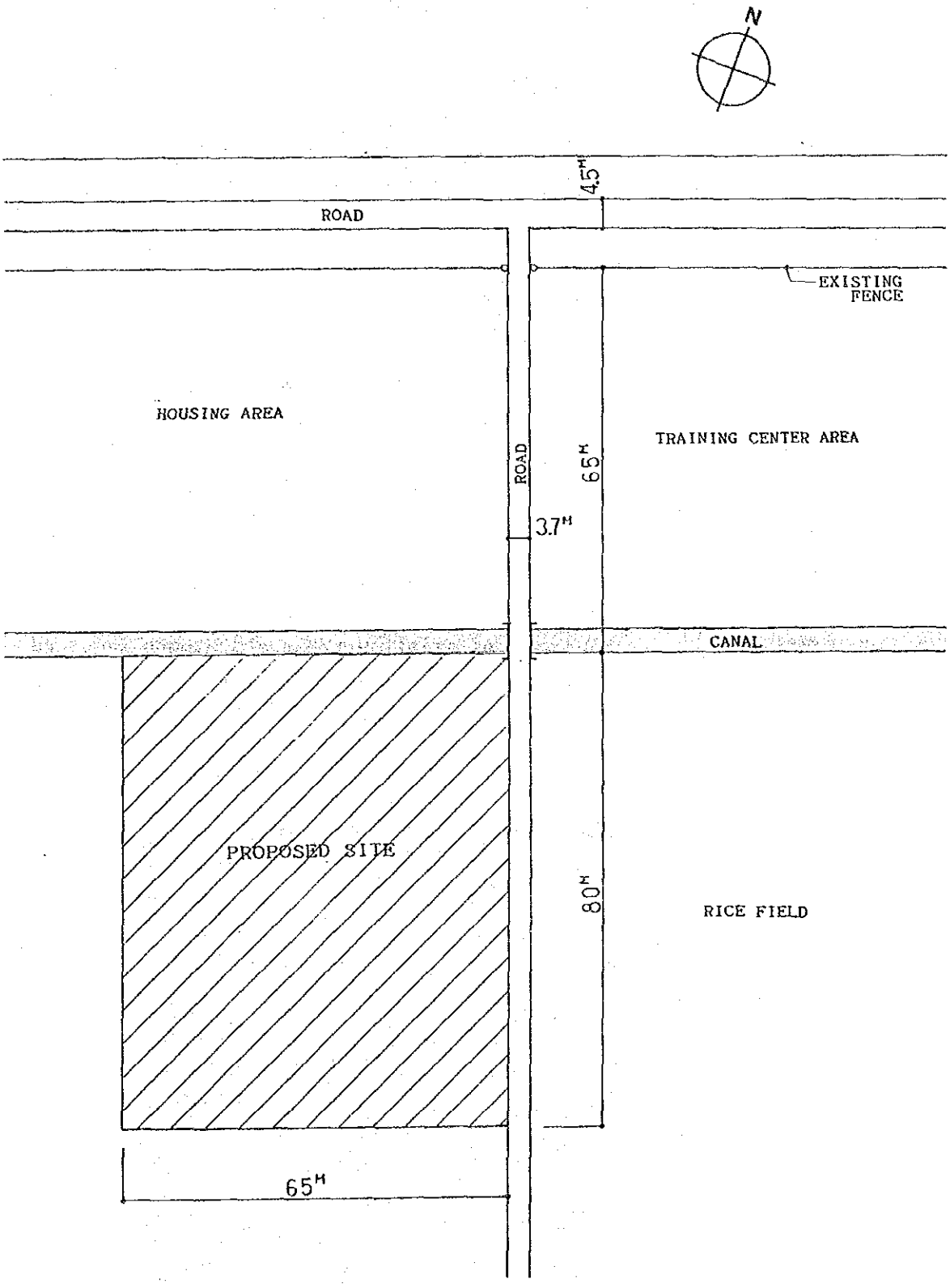
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

D.I. Aceh

LOCATION	Kuara/ACEH BARAT
CONDITIONS OF SITE	Rice Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	5,200 m^2
FOR RICE FIELD	25,000 m^2
PRESENT GROUND HEIGHT	Approx. 0.7 m lower than the access road
EARTH FILLING	Required, 4,000 m^3
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	Training Center and houses
OBSTRUCTIONS	None
OTHERS	None



FIELD LABORATORY --- Kuara / ACEH BARAT

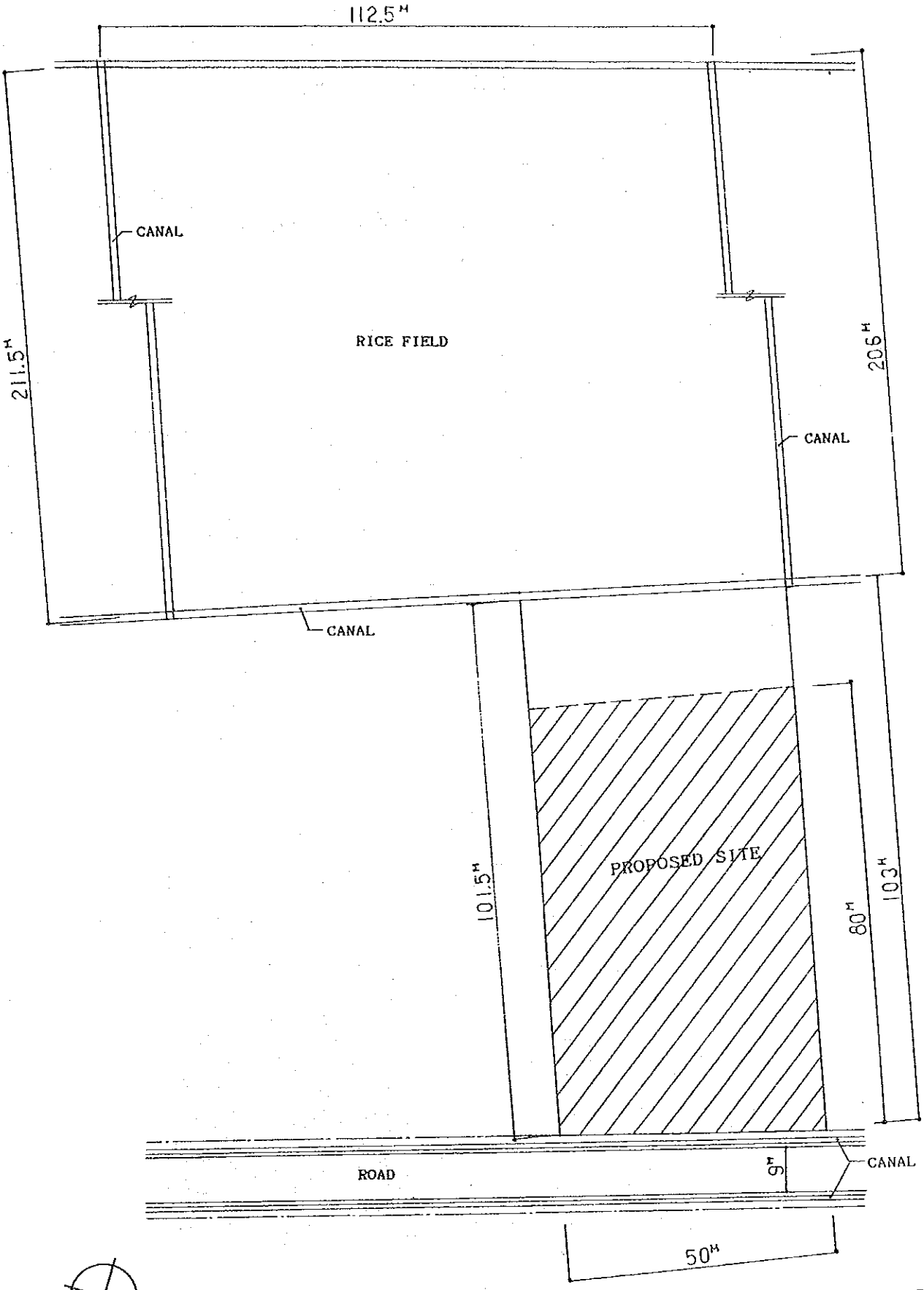
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

Lampung

LOCATION	Alung Selatan/LAMPUNG UTARA
CONDITIONS OF SITE	Grassy Plain Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	4,900 m^2
FOR RICE FIELD	25,000 m^2
PRESENT GROUND HEIGHT	Same level of access road
EARTH FILLING	Not necessary
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	None
OBSTRUCTIONS	Removal of existing trees and stumps required
OTHERS	Bridge construction required between the site and the access road



FIELD LABORATORY --- Alung Selatan / LAMPUNG UTARA

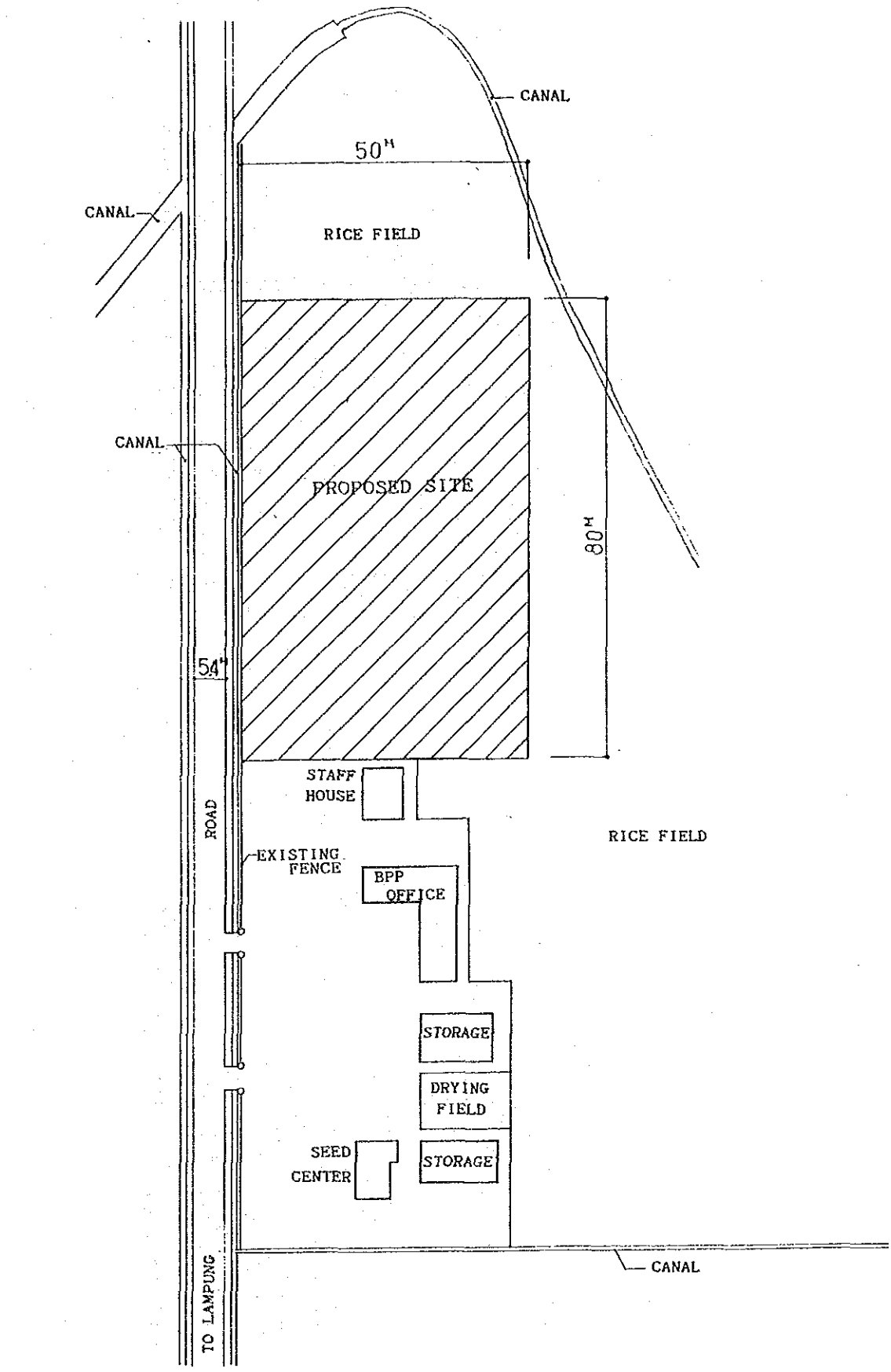
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

Lampung

LOCATION	Gading Rejo/LAMPUNG SELATAN
CONDITIONS OF SITE	Rice Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	4,000 m^2
FOR RICE FIELD	25,000 m^2
PRESENT GROUND HEIGHT	Approx. 1.0 m lower than the access road
EARTH FILLING	Required, 4,000 m^3
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	Seed Center, BPP office, houses and storage
OBSTRUCTIONS	None
OTHERS	Bridge construction required between the site and the access road



FIELD LABORATORY --- Gading Rejo / LAMPUNG SELATAN

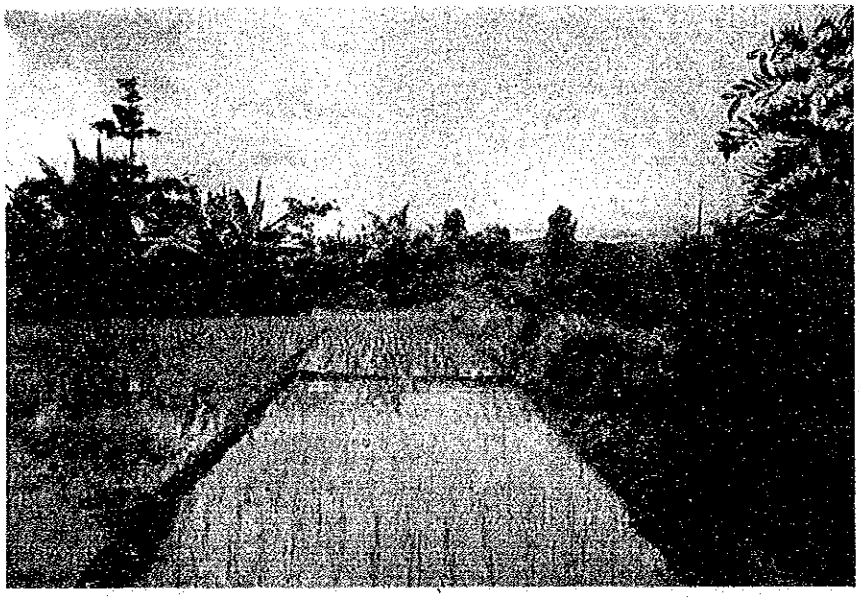
SITE CONFIGURATIONS AND CONDITIONS

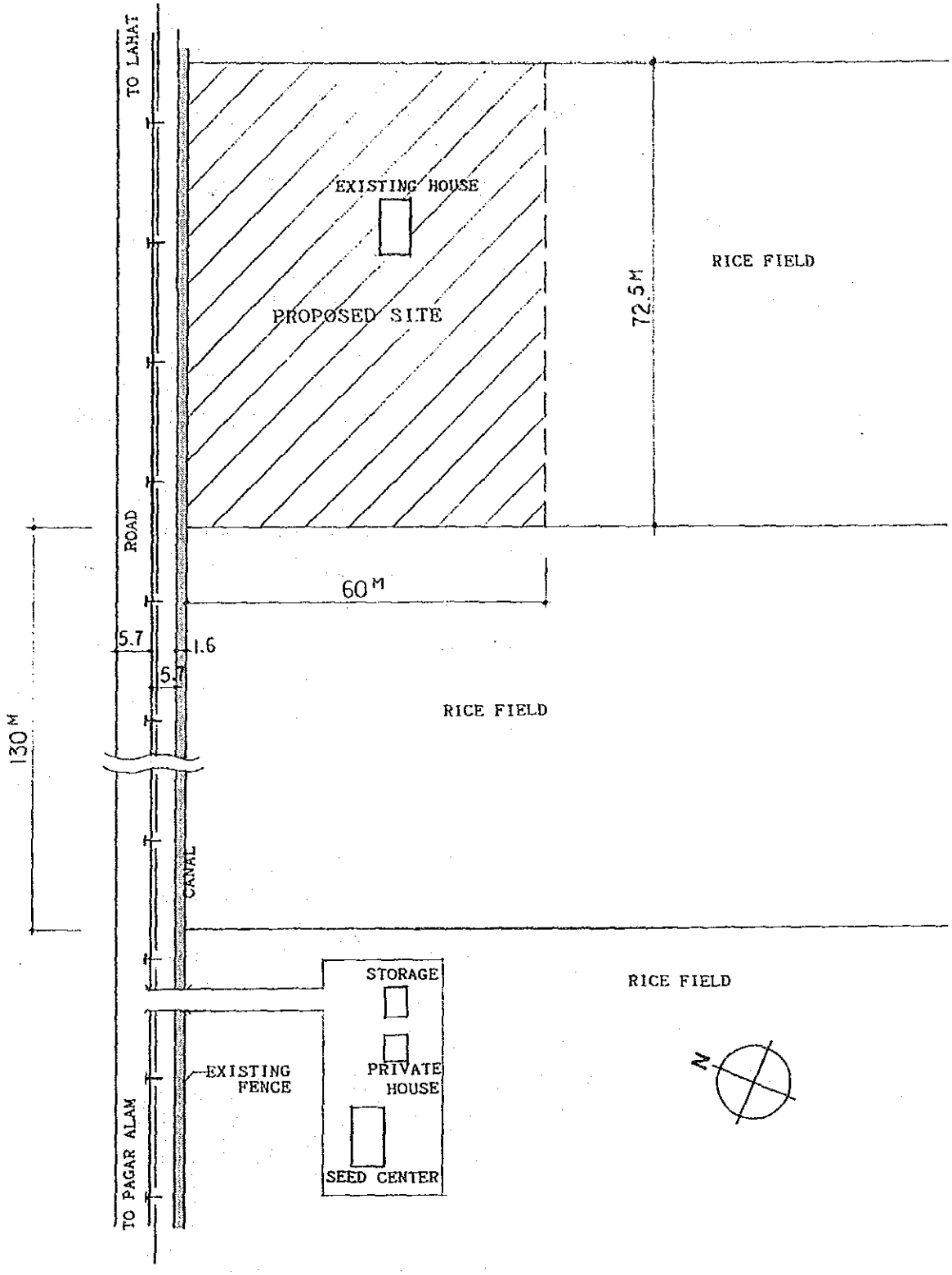
Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

South Sumatera

LOCATION	Pulau Pinang/LAHAT
CONDITIONS OF SITE	Rice Field and Grassy Plain Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	2,500 m^2
FOR RICE FIELD	20,000 m^2
PRESENT GROUND HEIGHT	1.0 m lower than the access road
EARTH FILLING	Required, 1.0 m deep
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available
EXISTING BUILDING	Seed Center
OBSTRUCTIONS	Removal of existing trees and existing houses of farmers required
OTHERS	Bridge construction required





FIELD LABORATORY --- Pulau Pinang / LAHAT

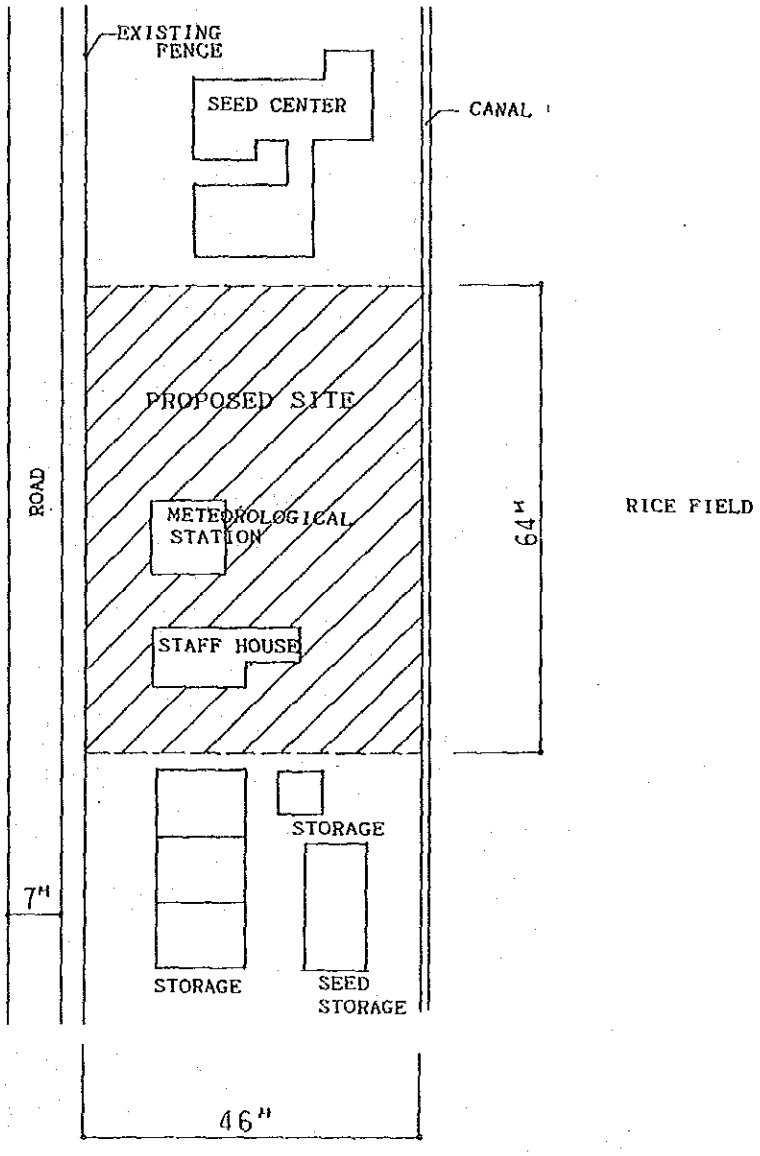
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

South Sumatera

LOCATION	Belitang/OGAN KOMERING ULU (OKU)
CONDITIONS OF SITE	Grassy Plain Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	2,900 m^2
FOR RICE FIELD	20,000 m^2
PRESENT GROUND HEIGHT	Approx. 0.8 m lower than the access road
EARTH FILLING	Not necessary
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available (SSBR)
EXISTING BUILDING	Seed Center, houses and storage
OBSTRUCTIONS	Removal of existing houses and facilities for weather observation required
OTHERS	None



FIELD LABORATORY --- Belitang / OGAN KOMERING ULU

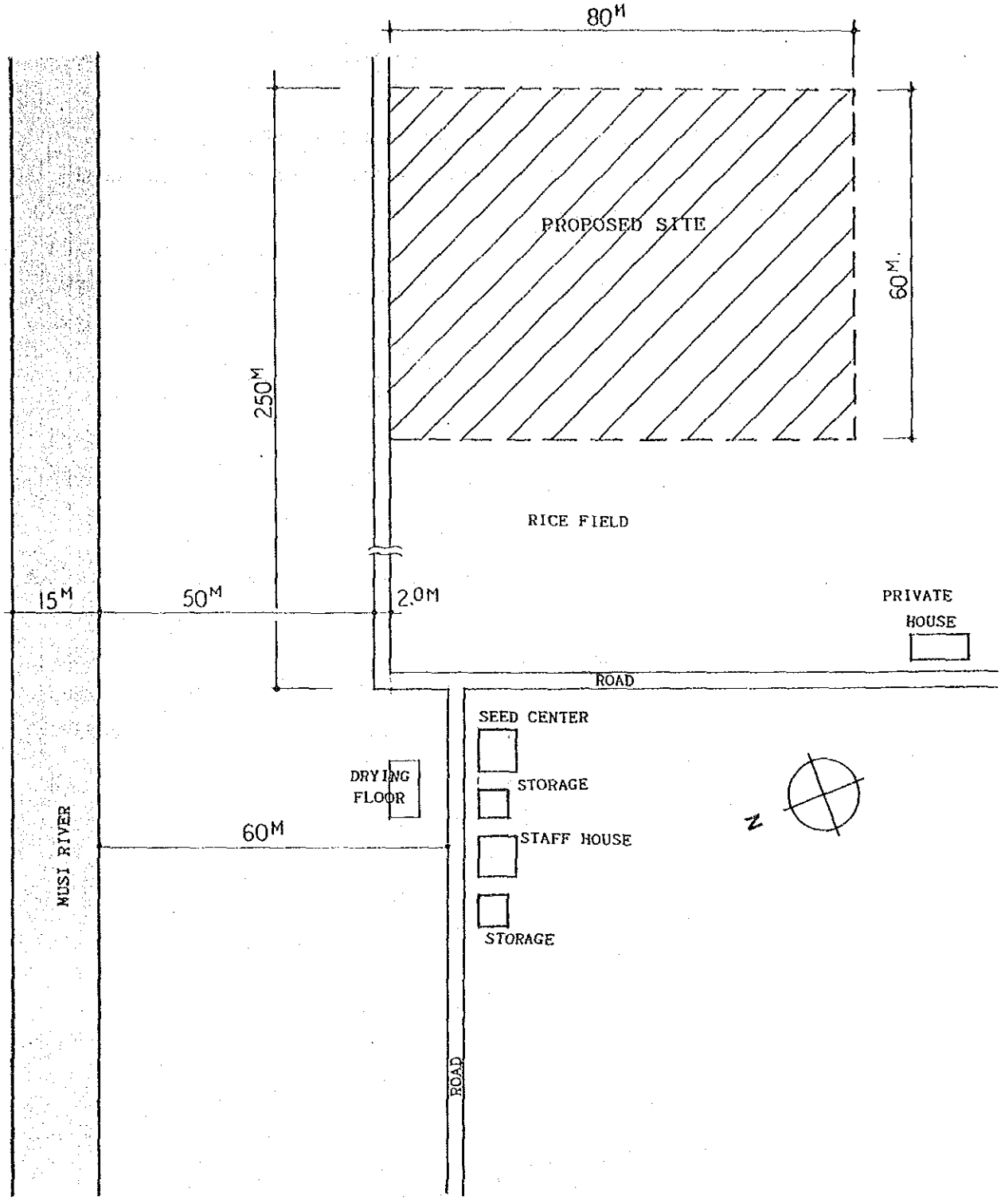
SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - FIELD LABORATORY

South Sumatera

LOCATION	Perwakilan Makarti Jaya/MUSI BANYUASIN
CONDITIONS OF SITE	Grassy Plain Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	10,000 m^2
FOR RICE FIELD	45,000 m^2
PRESENT GROUND HEIGHT	1.0 m lower othan the access road
EARTH FILLING	Required, 1.0 m deep
INFRASTRUCTURE	
ELECTRIC POWER	Not available (generator required)
WATER SUPPLY	Well boring required
TELEPHONE	Not available
EXISTING BUILDING	Seed Center
OBSTRUCTIONS	Removal of existing trees required
OTHERS	The site lies near a tributary of the MUSI River



FIELD LABORATORY --- Perwakilan Makarti Jaya / MUSI BANYUASIN

SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

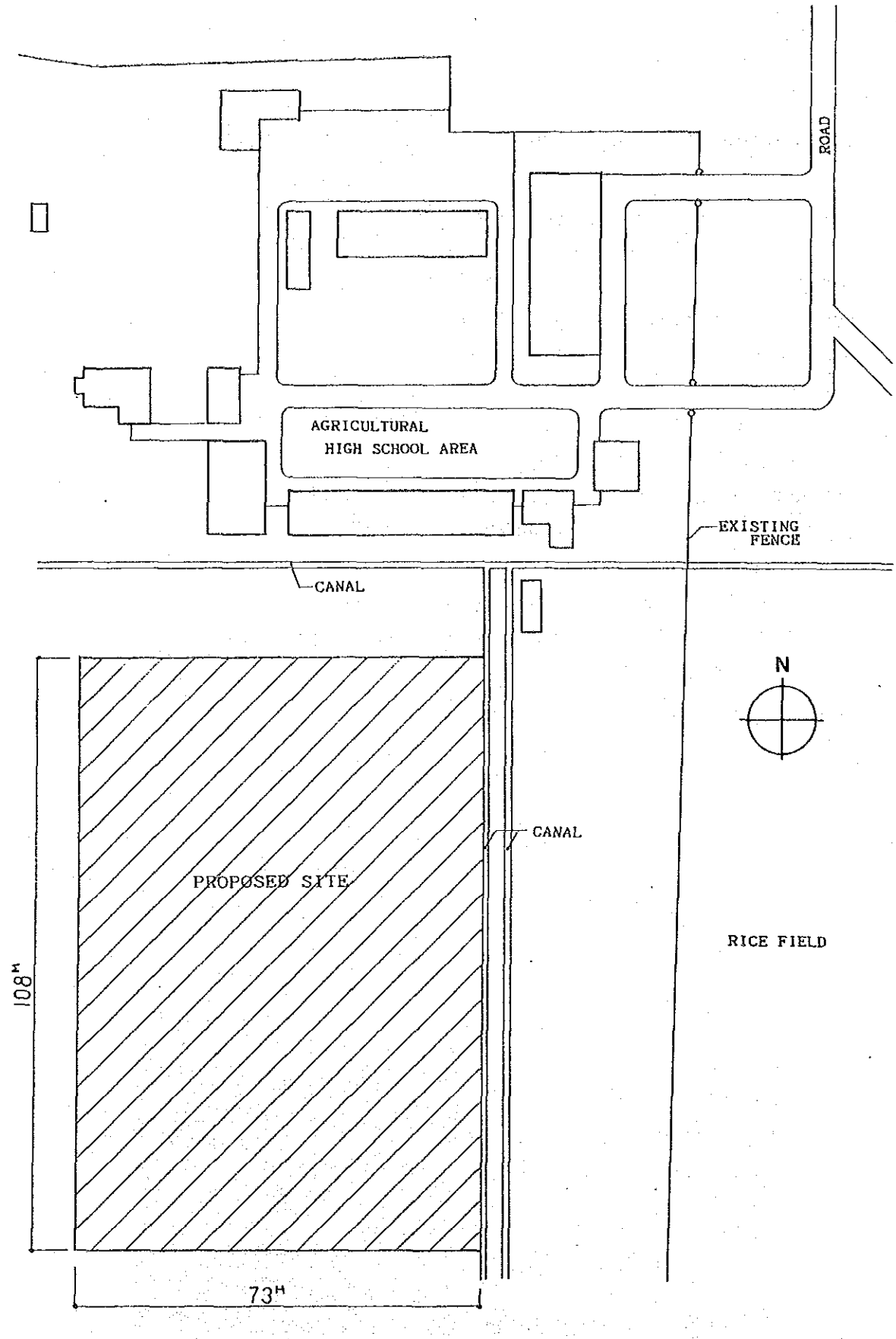
(3) Sub-Food Crop Protection Centers (SUB-FCPC)

Requested SUB-FCPC sites for ACEH BESAR and BANDAR LAMPUNG have been surveyed. However, the construction plan for these Centers is excluded from Phase III of the Project.

SITE CONFIGURATIONS AND CONDITIONS - SUB FIELD LABORATORY

D.I. Aceh

LOCATION	Kota Alam/ACEH BESAR
CONDITIONS OF SITE	Rice Field
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	7,800 m^2
FOR RICE FIELD	10,000 m^2
PRESENT GROUND HEIGHT	Approx. 1.0 m lower than the access road
EARTH FILLING	Required, 8,000 m^3
INFRASTRUCTURE	
ELECTRIC POWER	Available, 1 phase 220V
WATER SUPPLY	Water service available
TELEPHONE	Possible
EXISTING BUILDING	Vocational High school
OBSTRUCTIONS	None
OTHERS	None



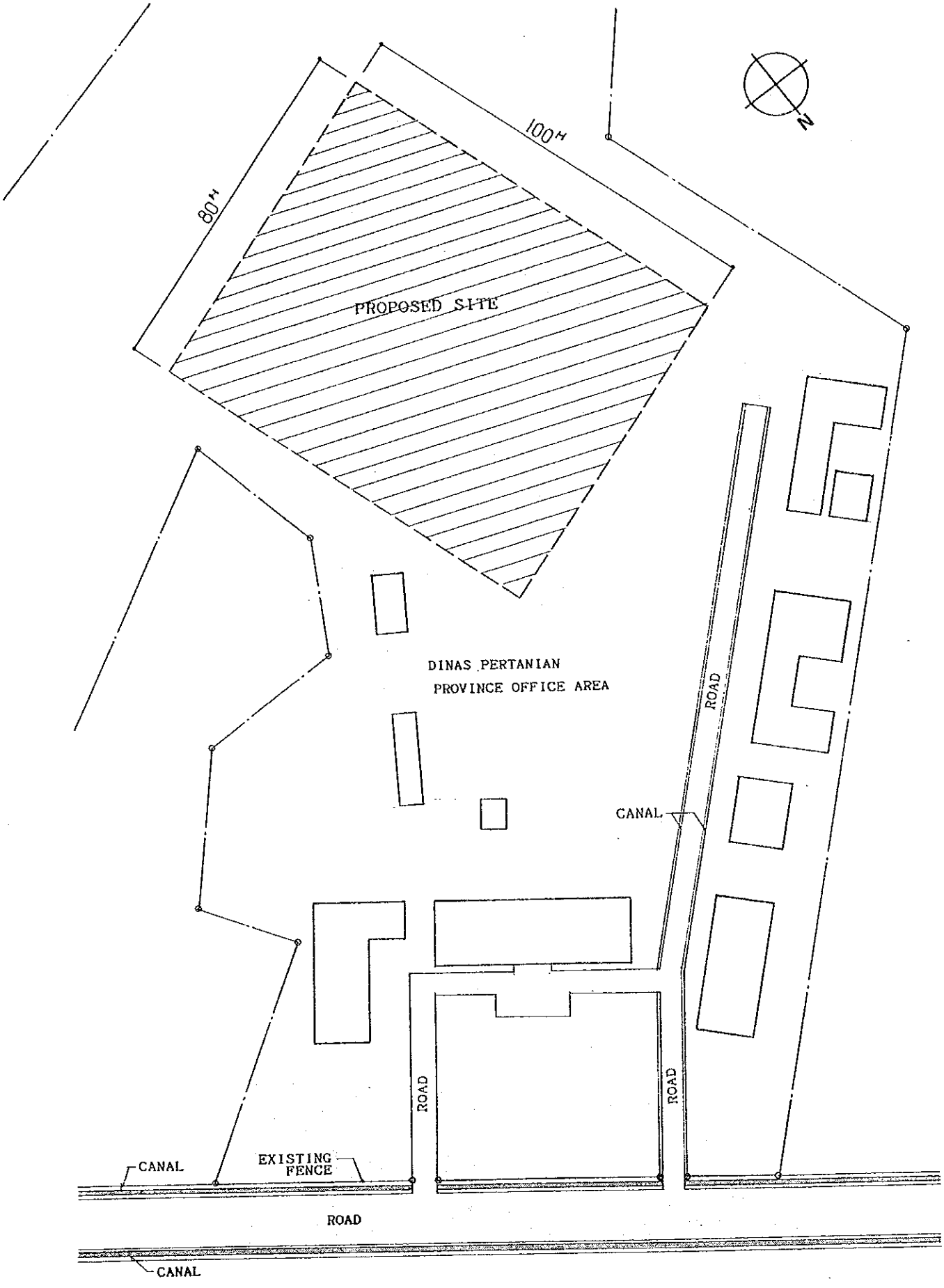
SUB-FOOD CROP PROTECTION CENTER -- Kota Alam/ ACEH BESAR

SITE CONFIGURATIONS AND CONDITIONS

Scale: 1/1000

SITE CONFIGURATIONS AND CONDITIONS - SUB FIELD LABORATORY

	Lampung
LOCATION	Natar/BANDAR LAMPUNG
CONDITIONS OF SITE	Grassy Plain Land
OWNERSHIP OF SITE	Province
AREA OF SITE	
FOR BUILDING	8,000 m^2
FOR RICE FIELD	None
PRESENT GROUND HEIGHT	Higher than the access road, with slope
EARTH FILLING	Not necessary
INFRASTRUCTURE	
ELECTRIC POWER	Available, 1 phase 220V
WATER SUPPLY	Well boring required
TELEPHONE	Possible
EXISTING BUILDING	Province office and storage
OBSTRUCTIONS	None
OTHERS	None



SUB-FOOD CROP PROTECTION CENTER --- Natar / BANDAR LAMPUNG

SITE CONFIGURATIONS AND CONDITIONS Scale: 1/1200

CHAPTER 4. BASIC DESIGN

CHAPTER 4. BASIC DESIGN

4-1 BASIC DESIGN OF FACILITIES

4-1-1 Design Principles

(1) Design principles in Phase III are the same as those in Phases I and II of the Project excepting special consideration given to the locality of the six provinces outside of Jawa and Bali. All facilities shall be completely functional to play roles based on "The Rice Pest and Disease Forecasting and Control Project (RPFP) (ATA-389)."

(2) Almost all of the facilities under the Project are to be constructed in rural villages. Emphasis shall therefore be placed on the regional characteristics of each locality, and adequate consideration shall be given to harmonizing the facilities with the local atmosphere.

(3) The facilities shall be planned upon acquiring a full grasp of the climate, natural features, and building conditions on the islands outside of Jawa and Bali. They shall be planned to be inexpensive and economical to maintain, operate, and administer with due regard to energy saving.

(4) Each of the facilities under the Project will have its own experiment and study facilities which are closely related to actual rice cropping in the field. Each of these facilities should be designed as a single-story building as much as possible.

(5) The FL buildings at eleven (11) locations, in view of their experimental and study functions and the number of personnel that they are to accommodate, shall be designed as a single-story structure suited to any of the sites.