

## *Figures*

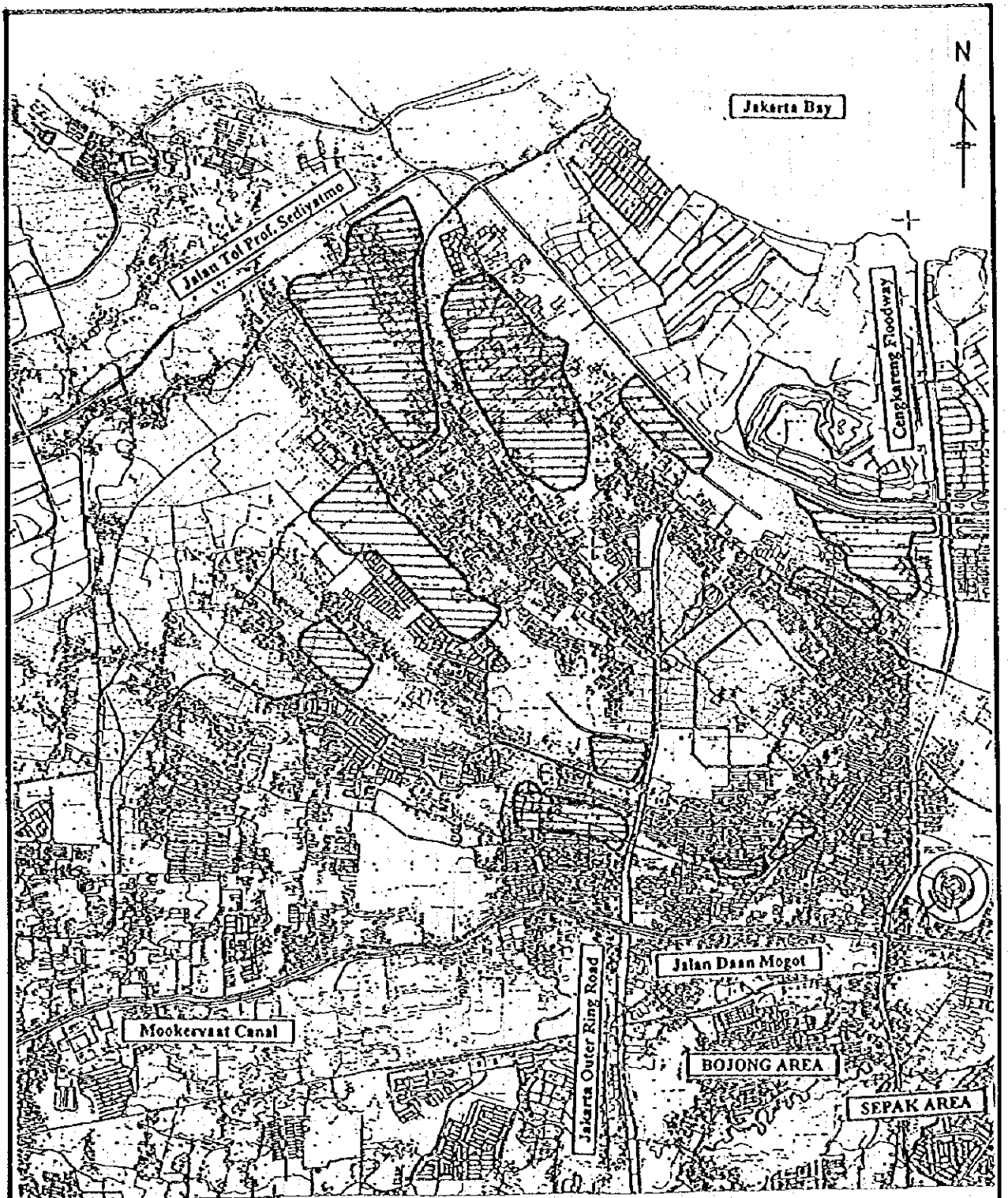


Fig. 1 Habitual Inundation Areas in the Project Area(1/2)  
(Cengkareng West Area)

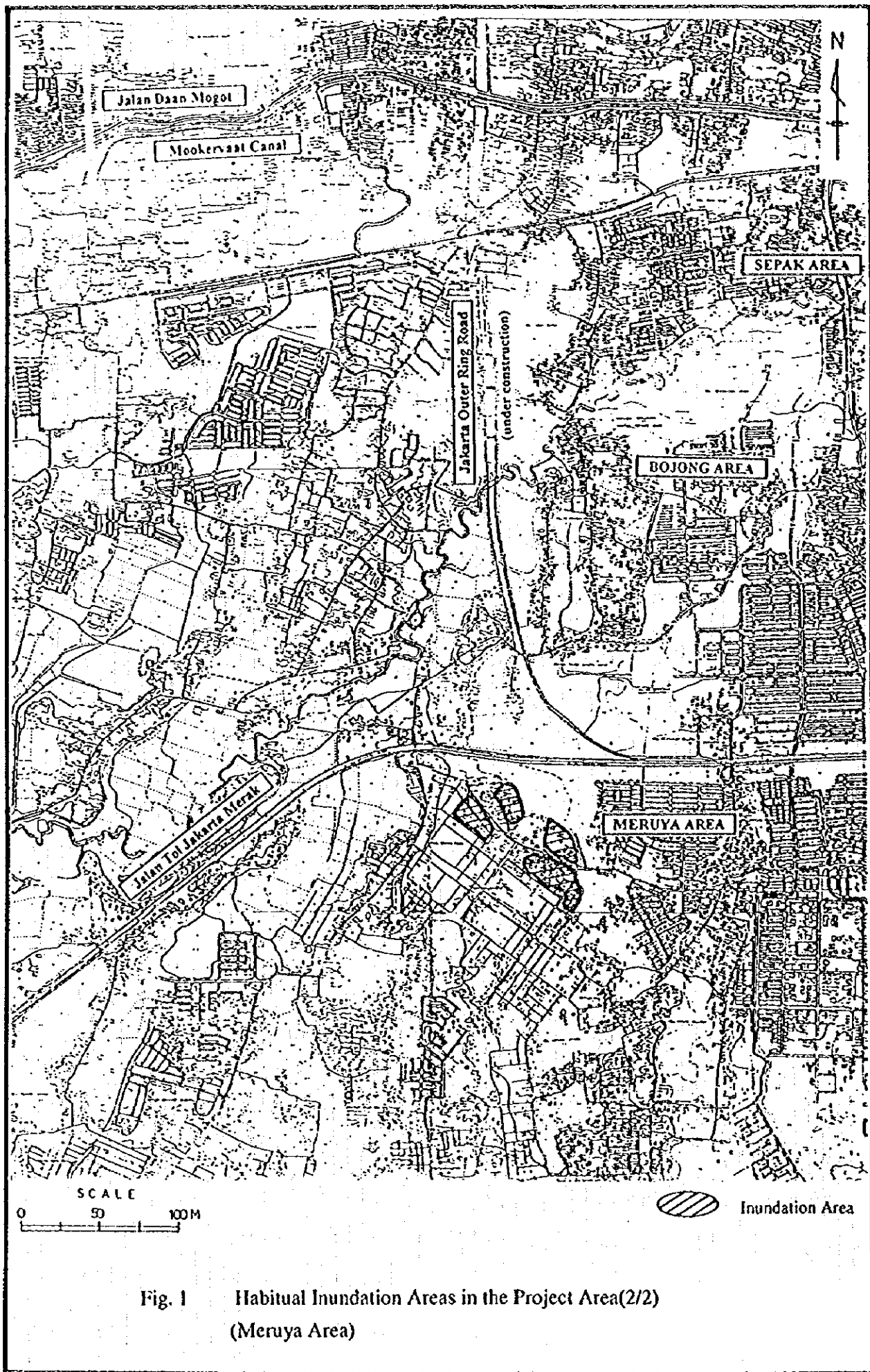


Fig. 1 Habitual Inundation Areas in the Project Area(2/2)  
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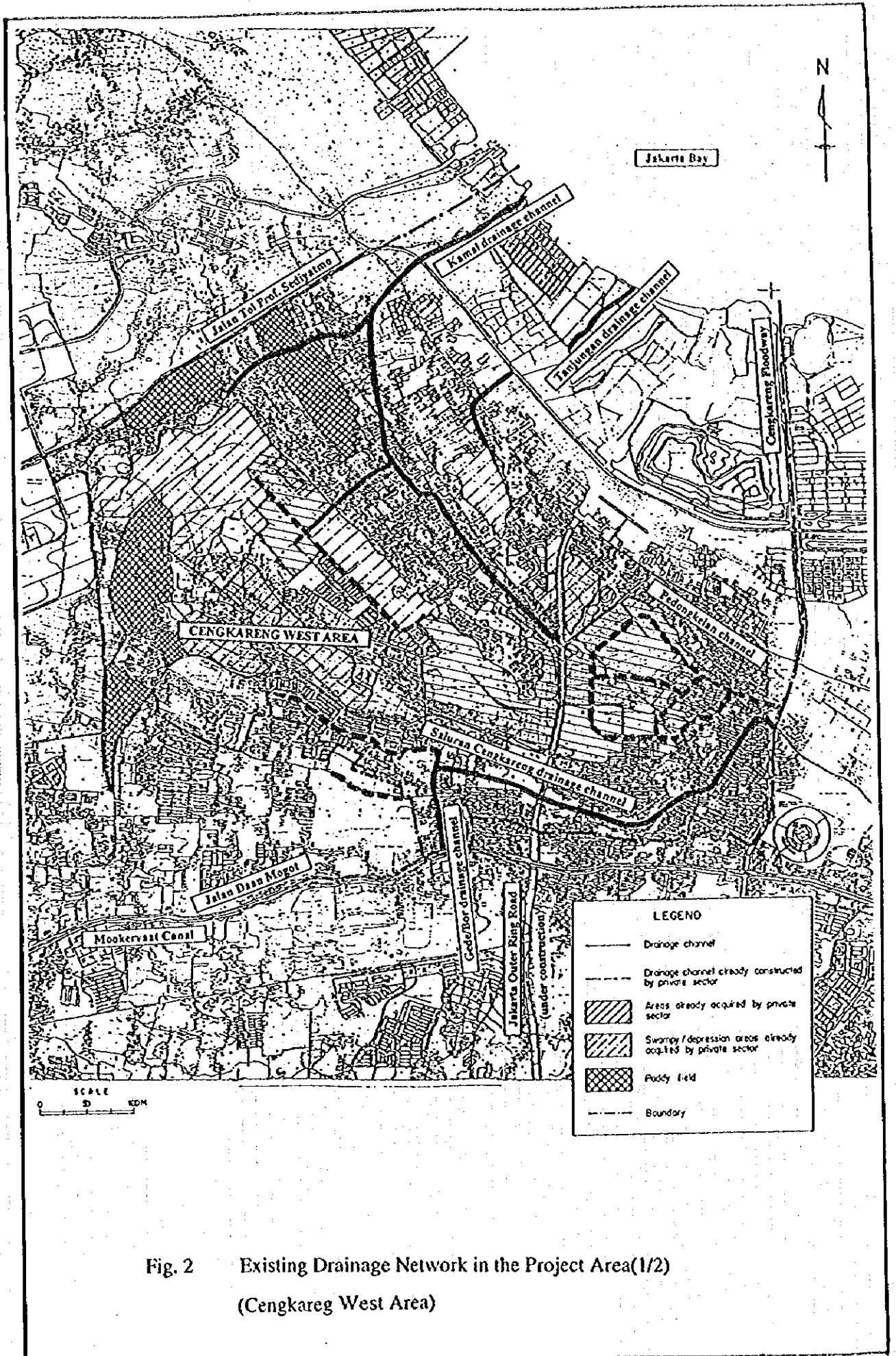


Fig. 2 Existing Drainage Network in the Project Area(1/2)  
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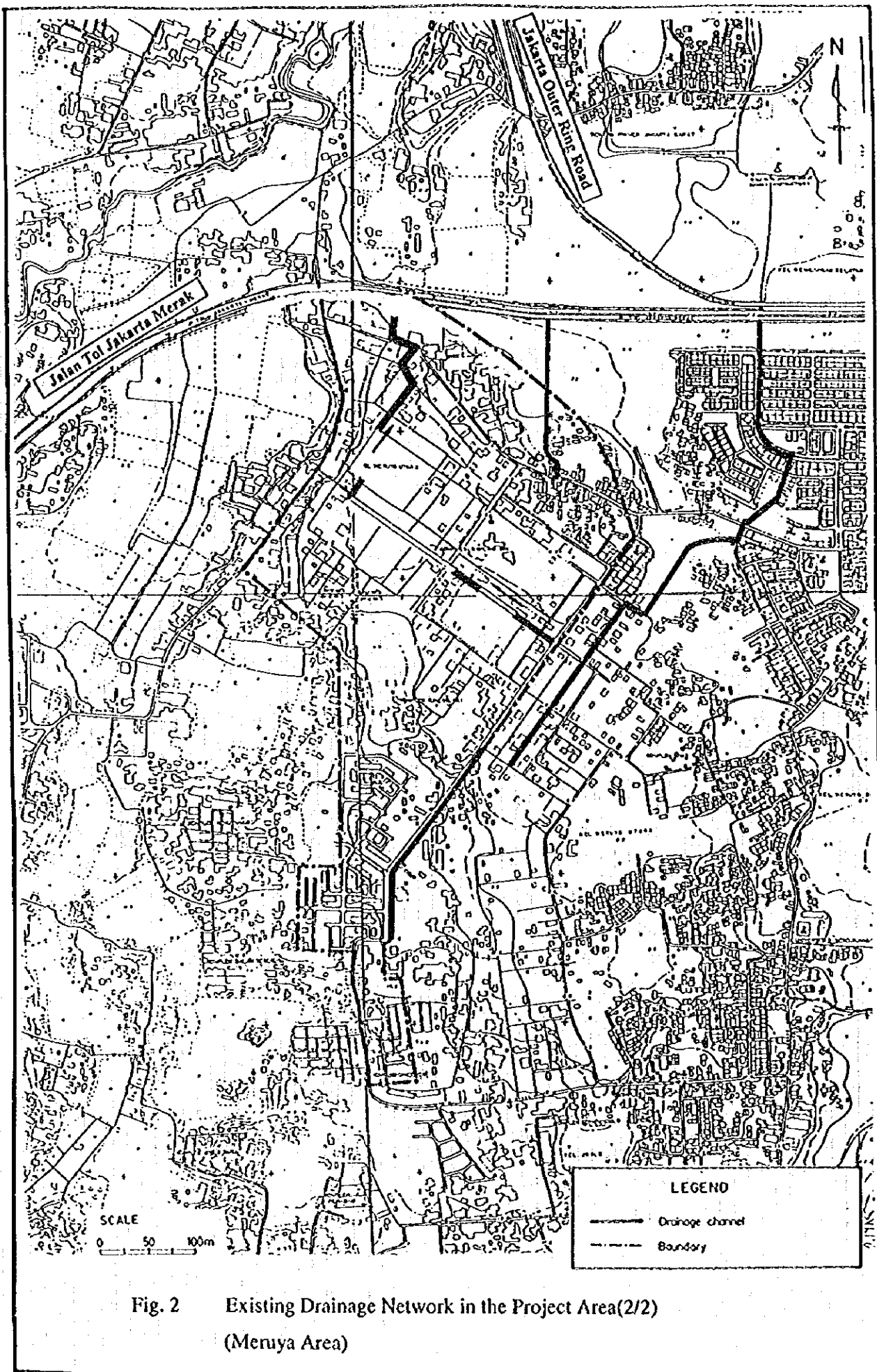


Fig. 2 Existing Drainage Network in the Project Area(2/2)  
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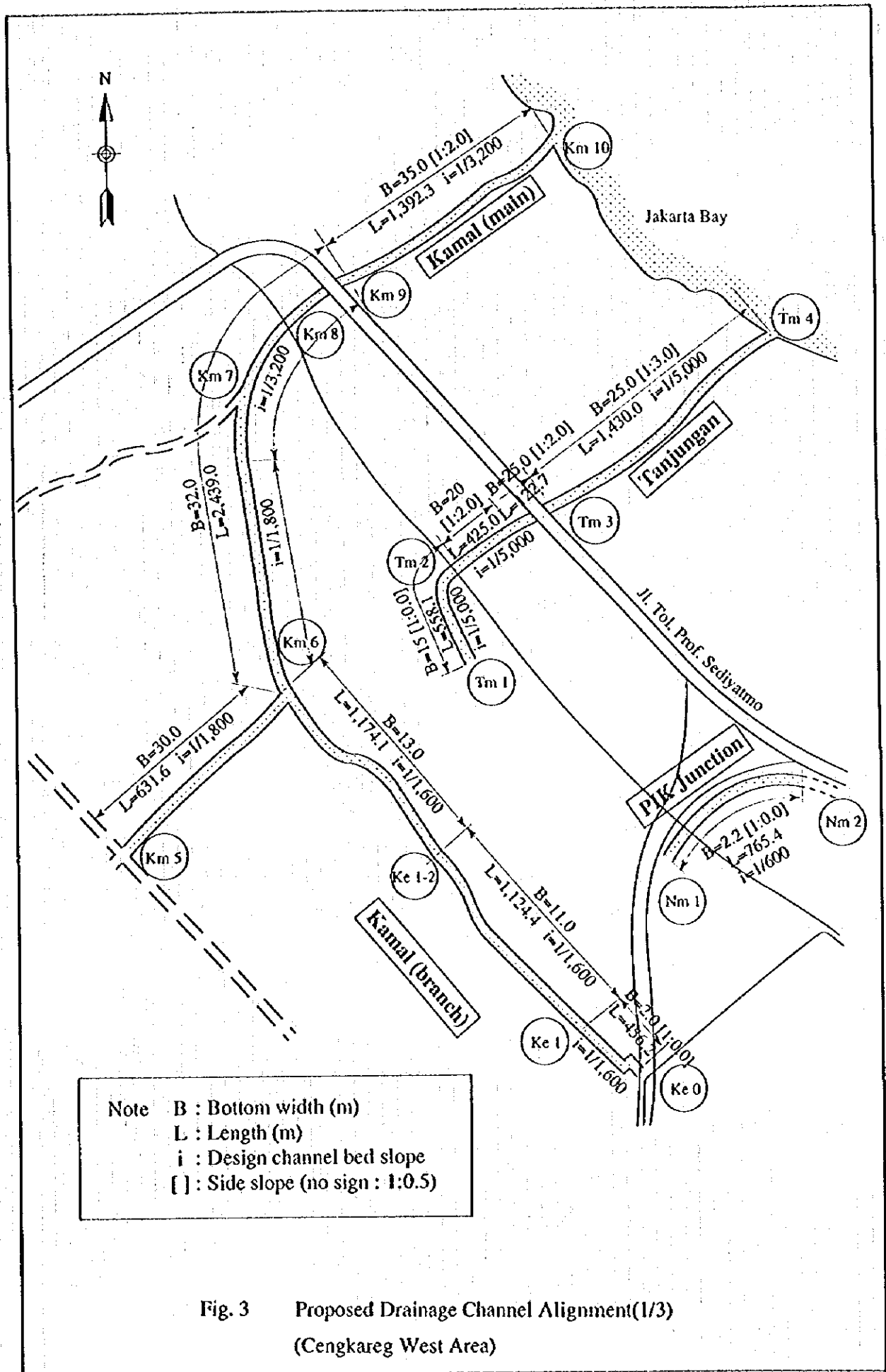
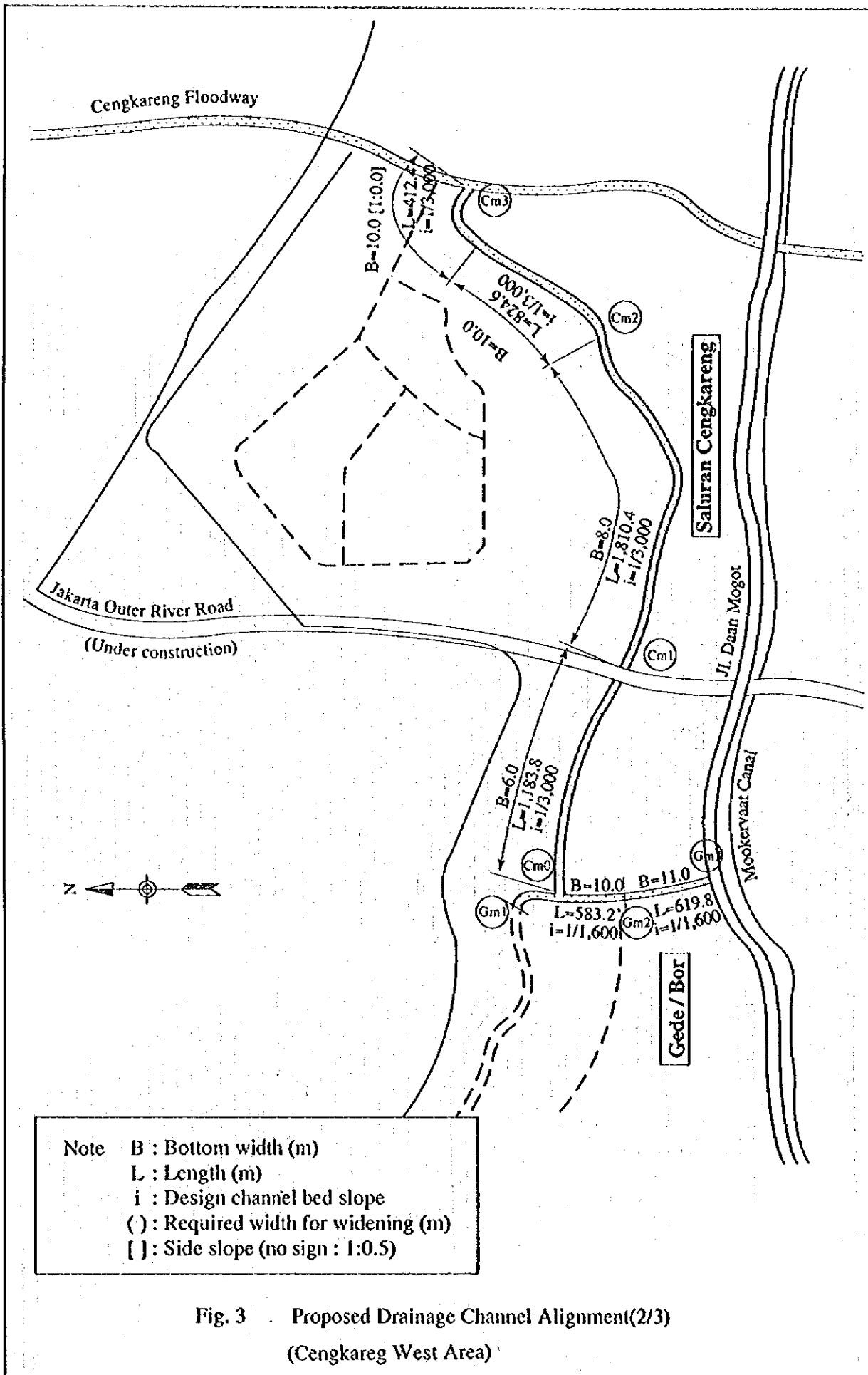


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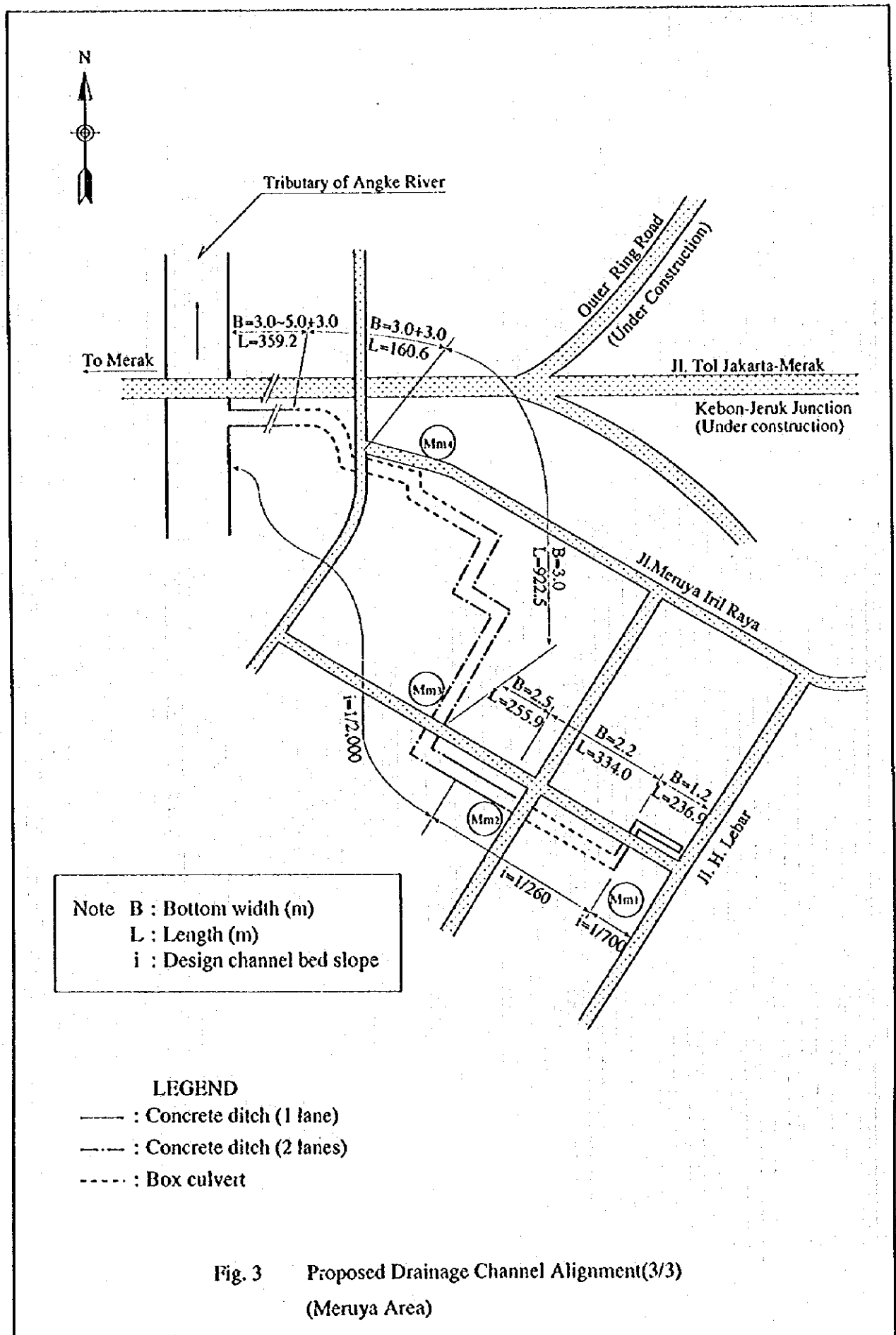


Fig. 3 Proposed Drainage Channel Alignment(3/3)  
(Meruya Area)



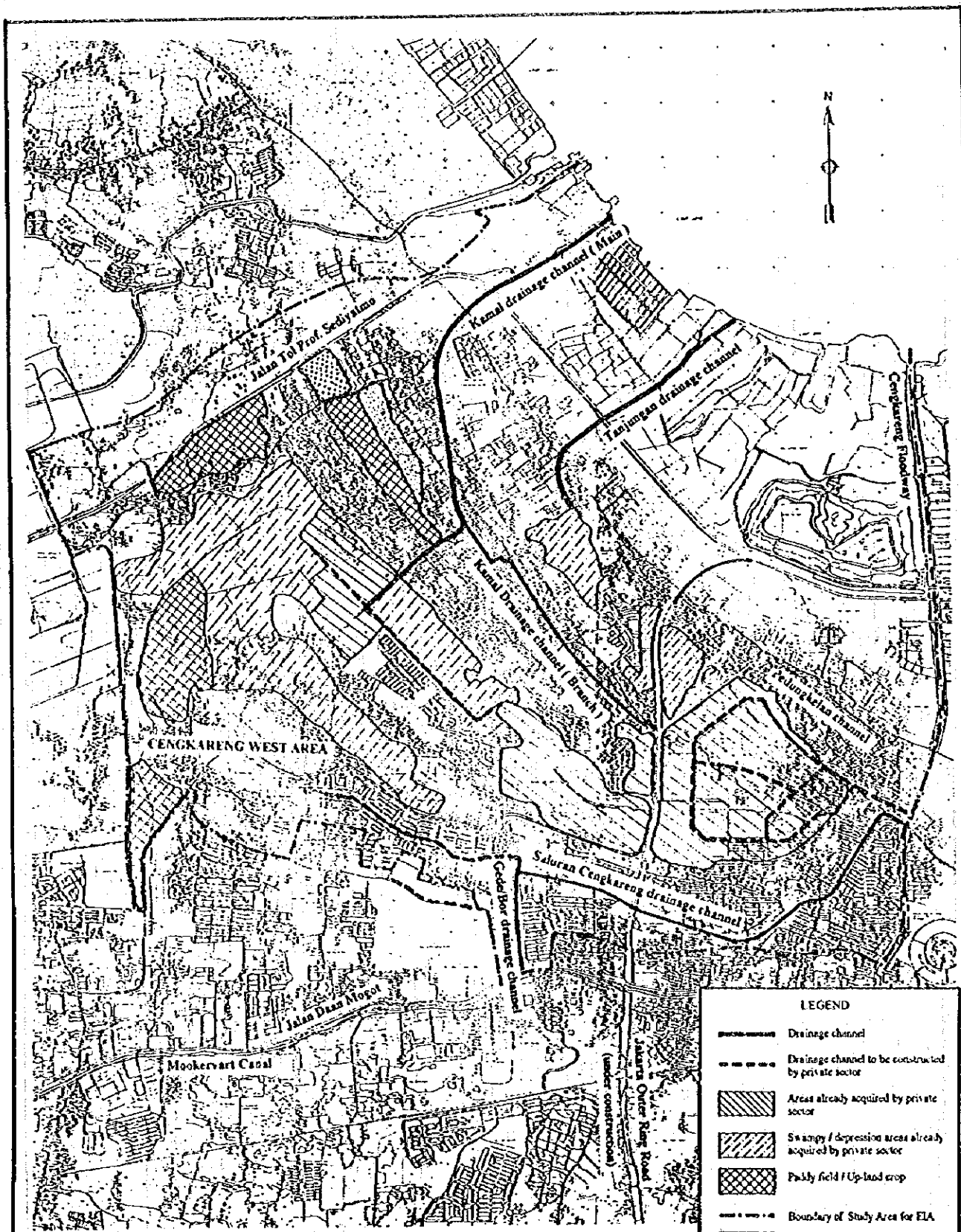
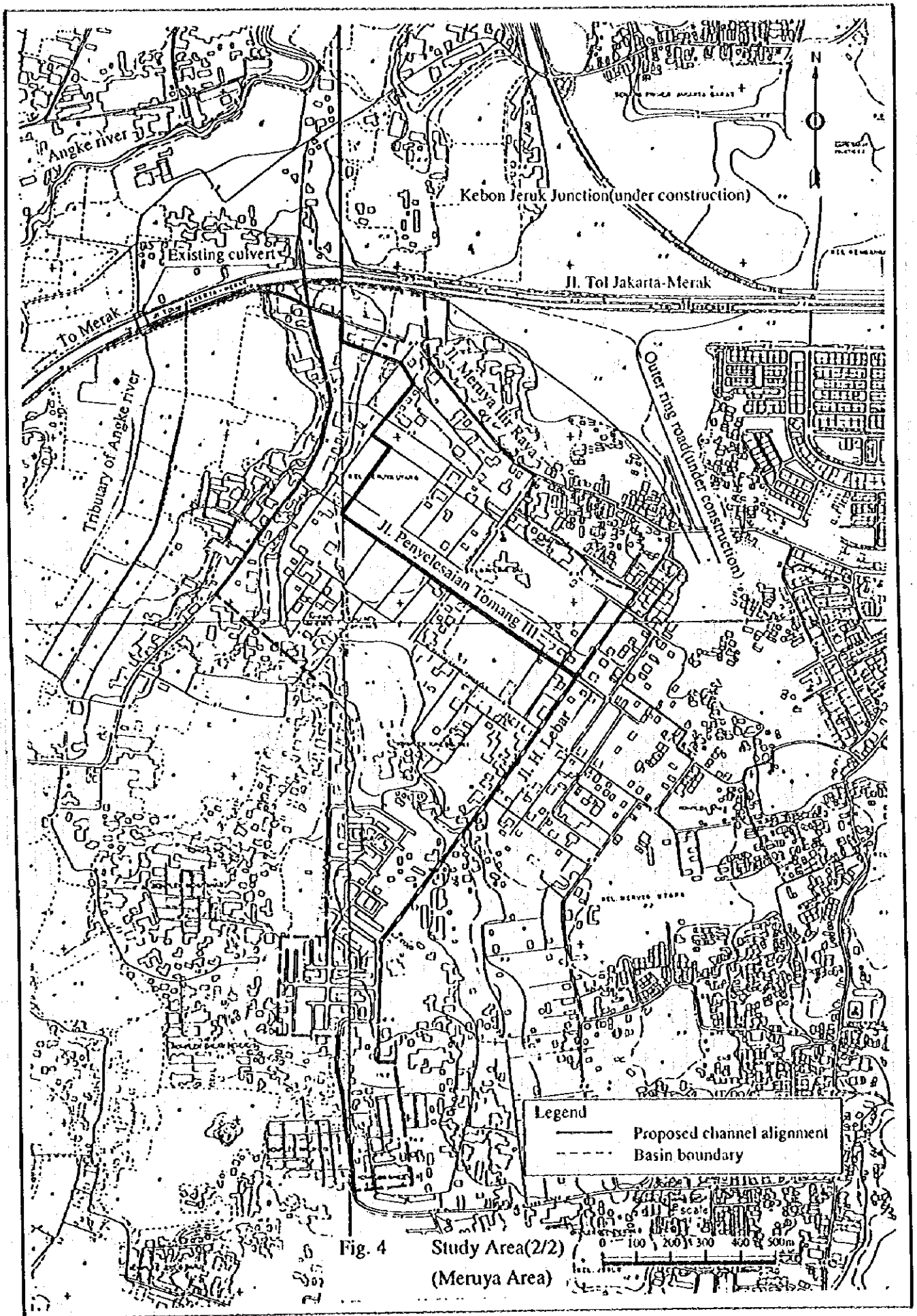


Fig. 4 Study Area(1/2)  
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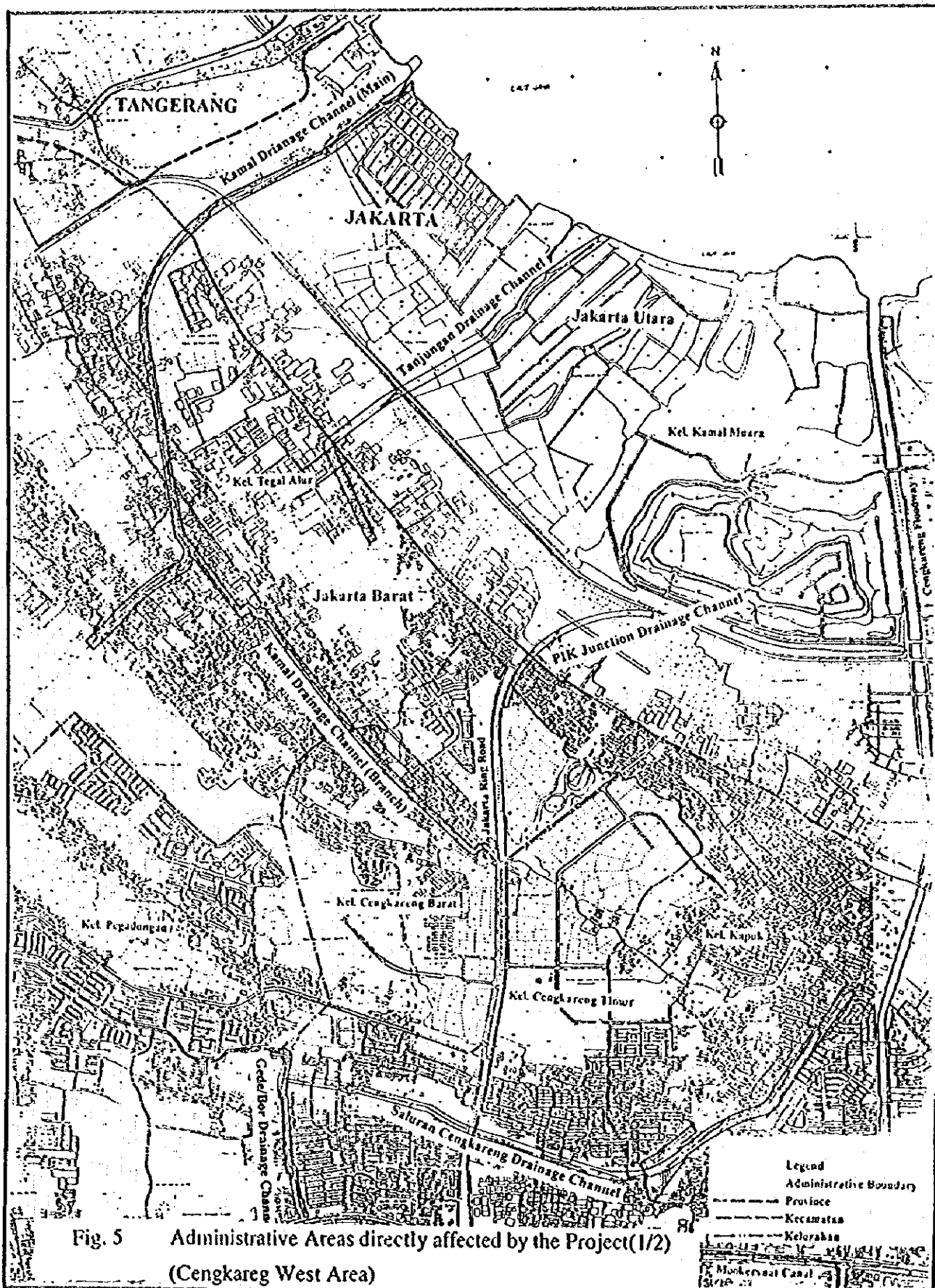


Fig. 5 Administrative Areas directly affected by the Project(1/2)  
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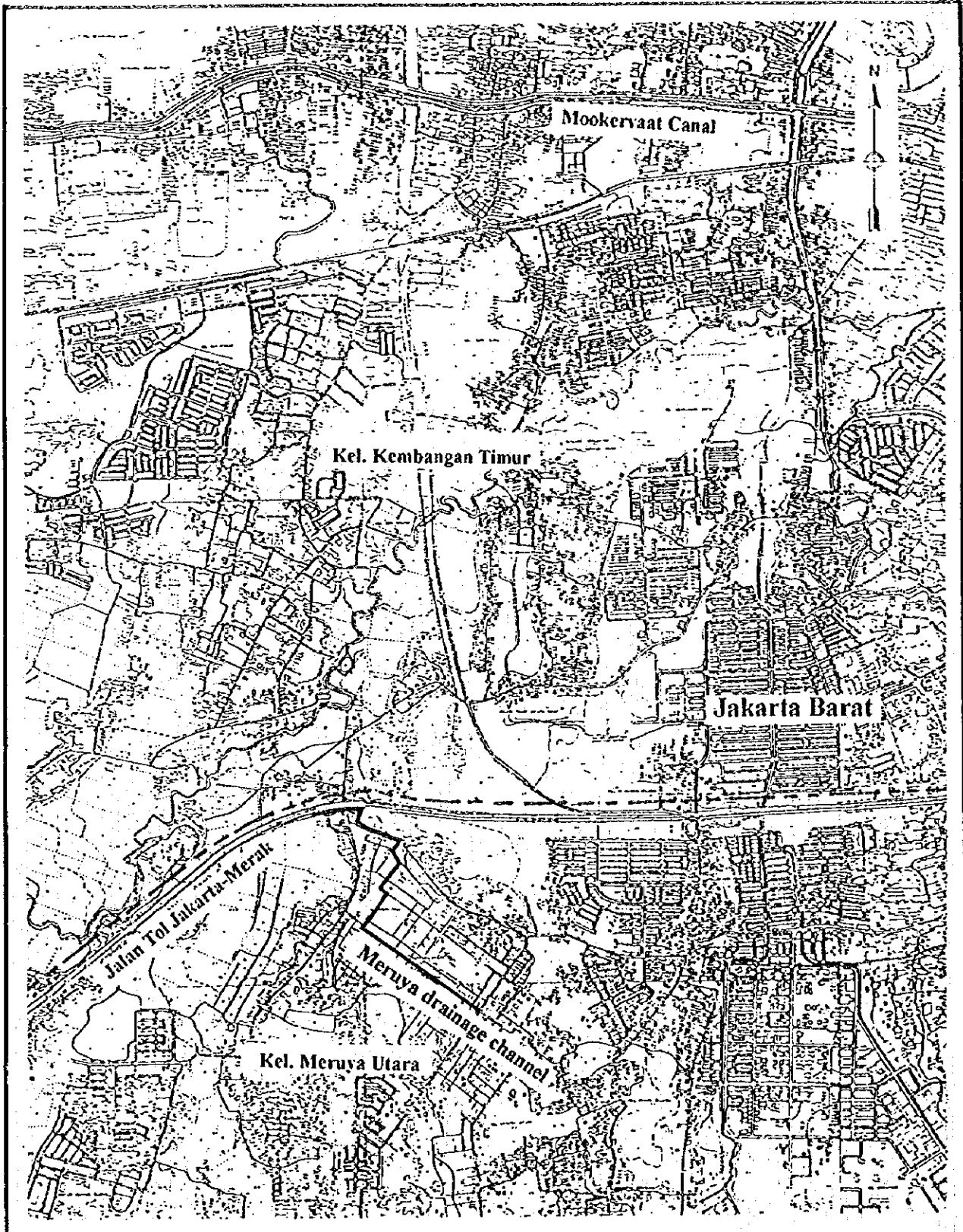
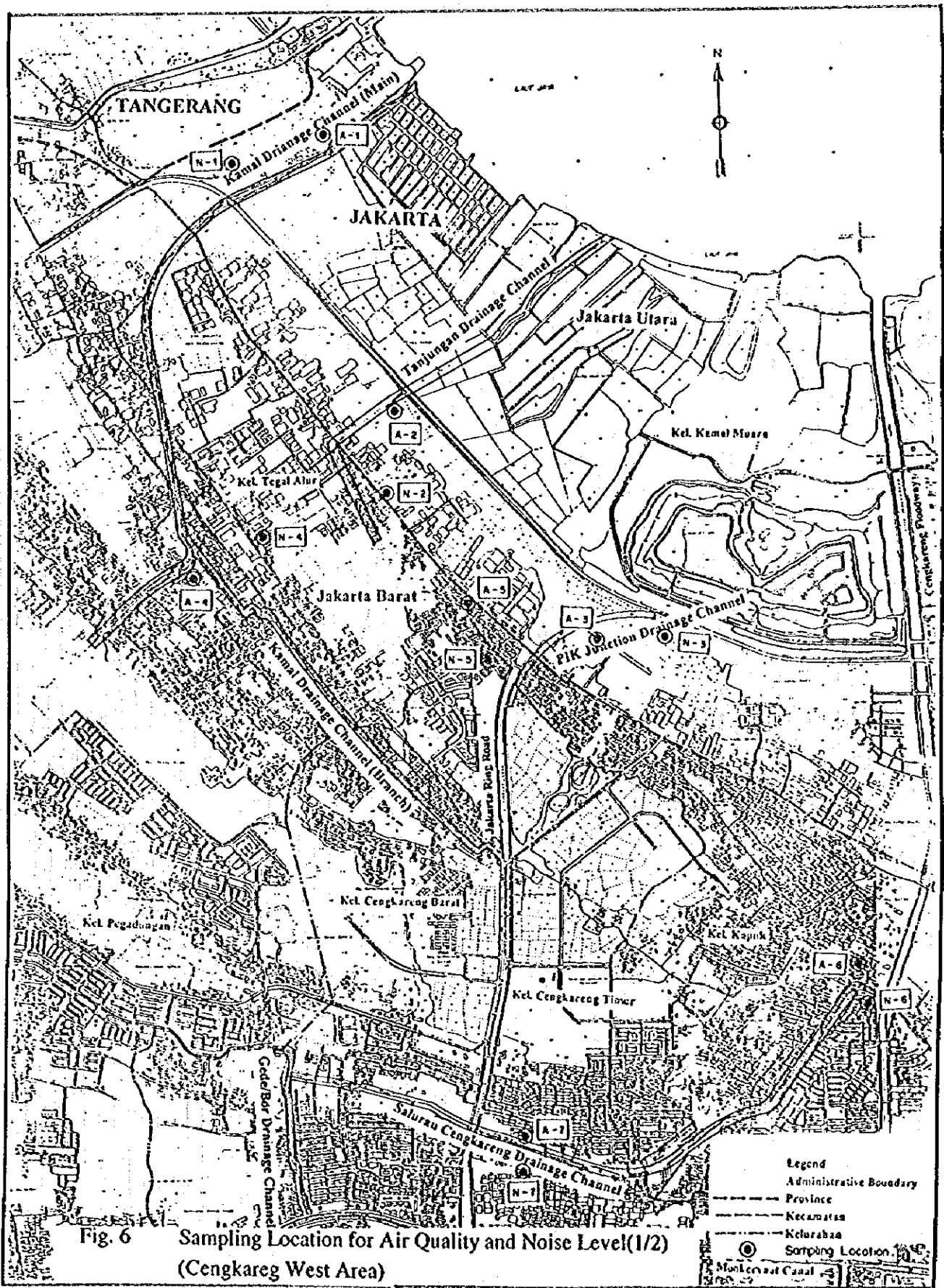
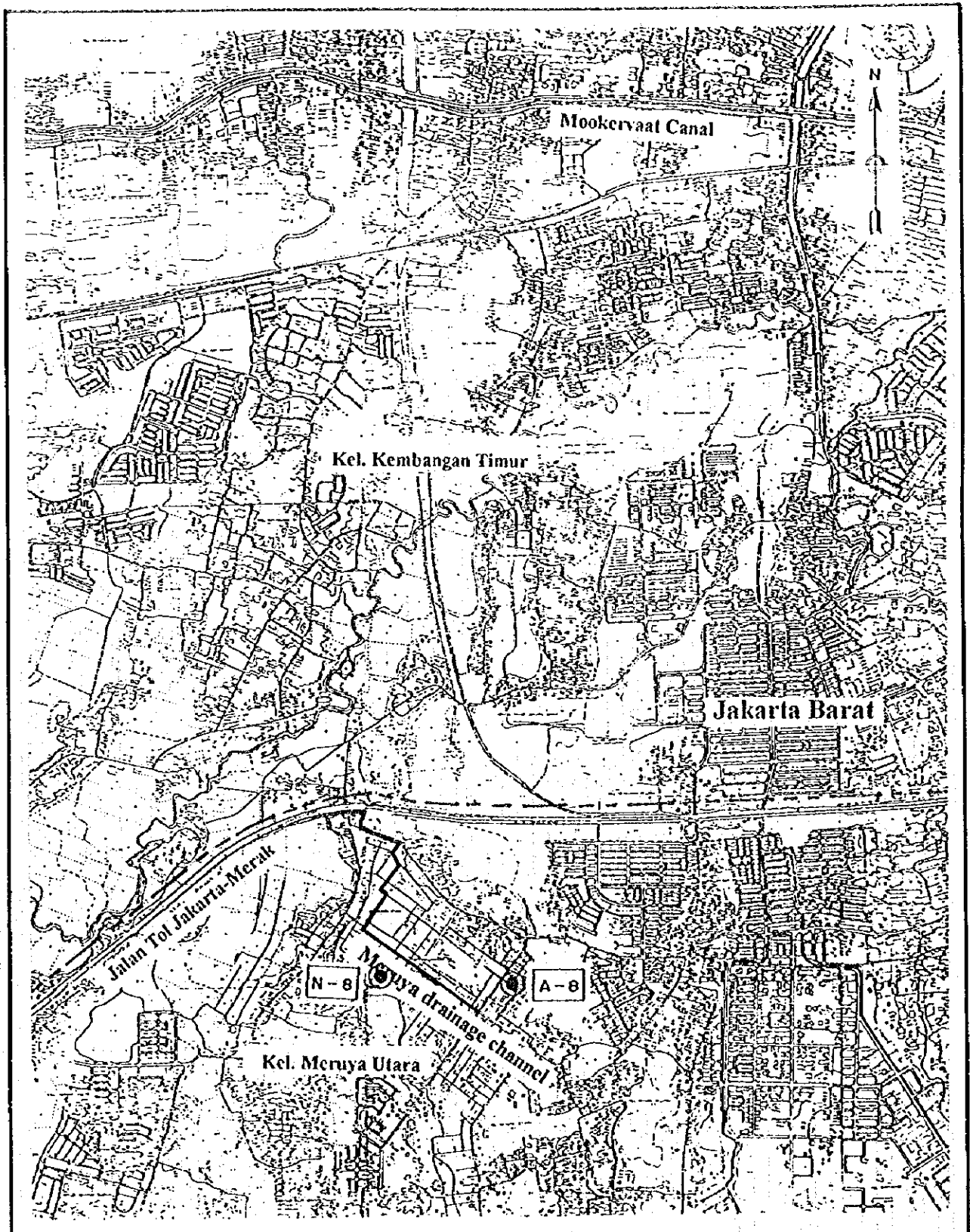


Fig. 5 Administrative Areas directly affected by the Project(2/2)  
(Meruya Area)





Legend  
 - - - - - Kelurahan  
 ● Sampling Location

Fig. 6 Sampling Location for Air Quality and Noise Level(2/2)  
 (Meruya Area)

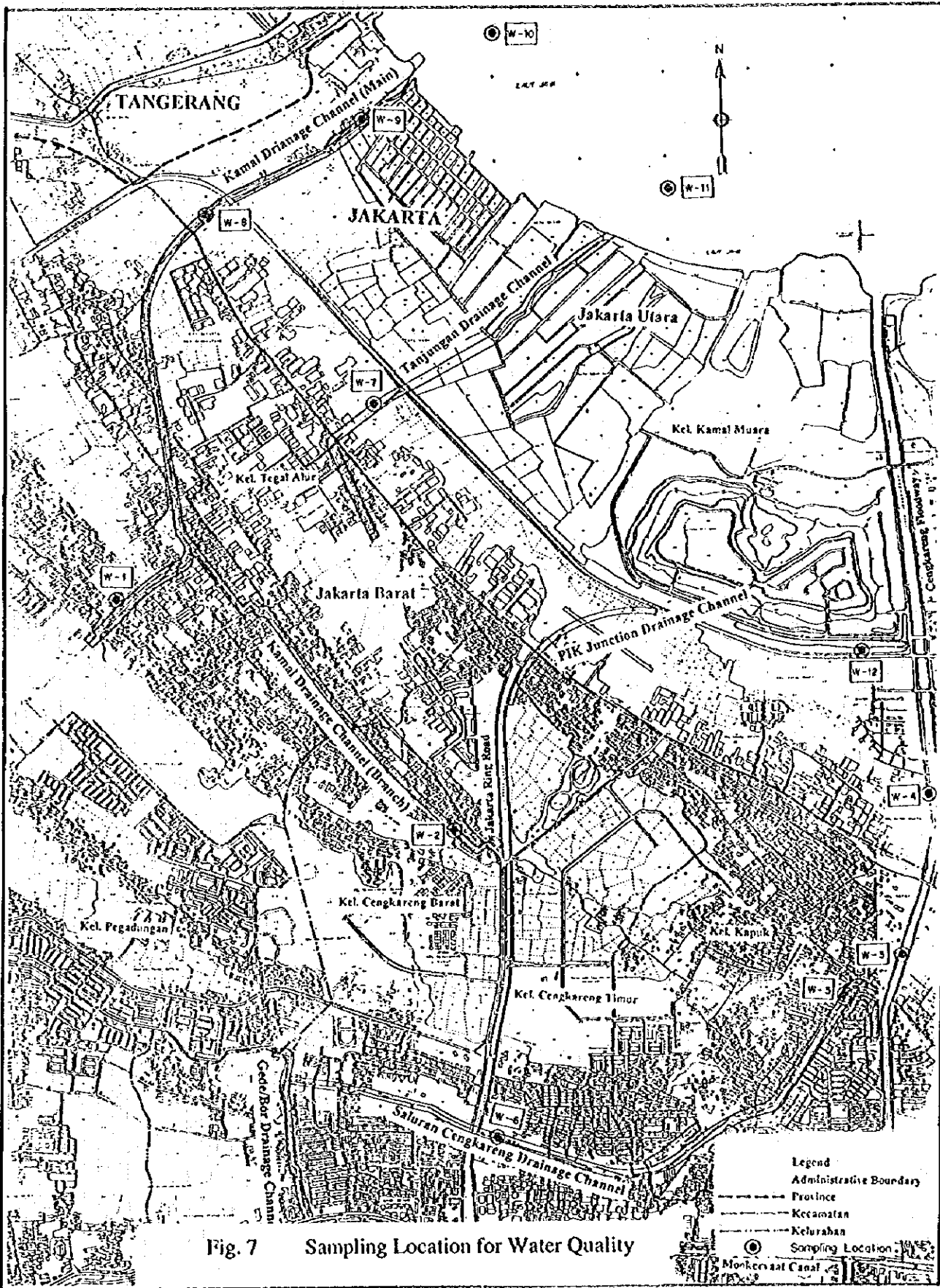


Fig. 7 Sampling Location for Water Quality

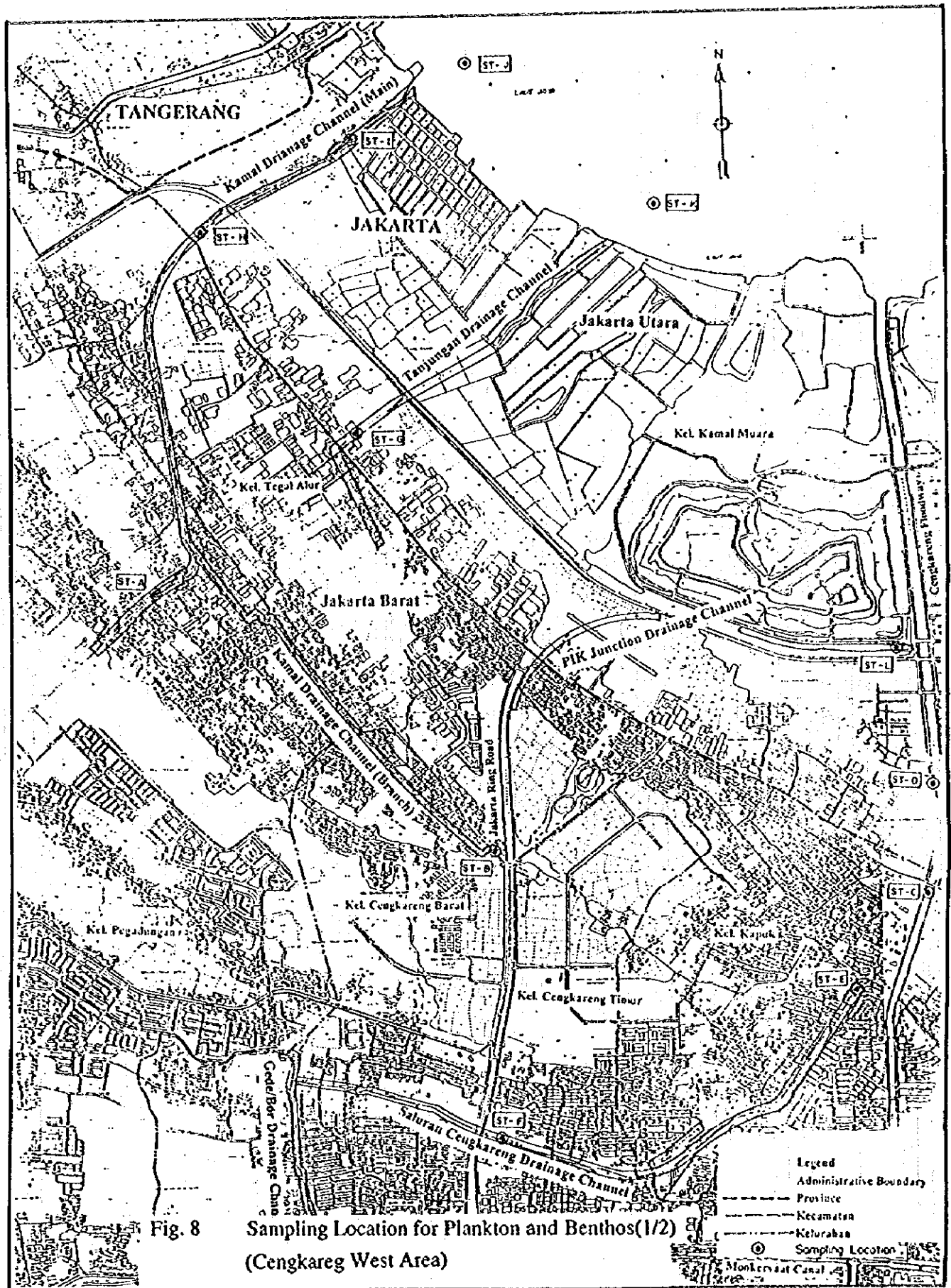


Fig. 8 Sampling Location for Plankton and Benthos(1/2) (Cengkareng West Area)



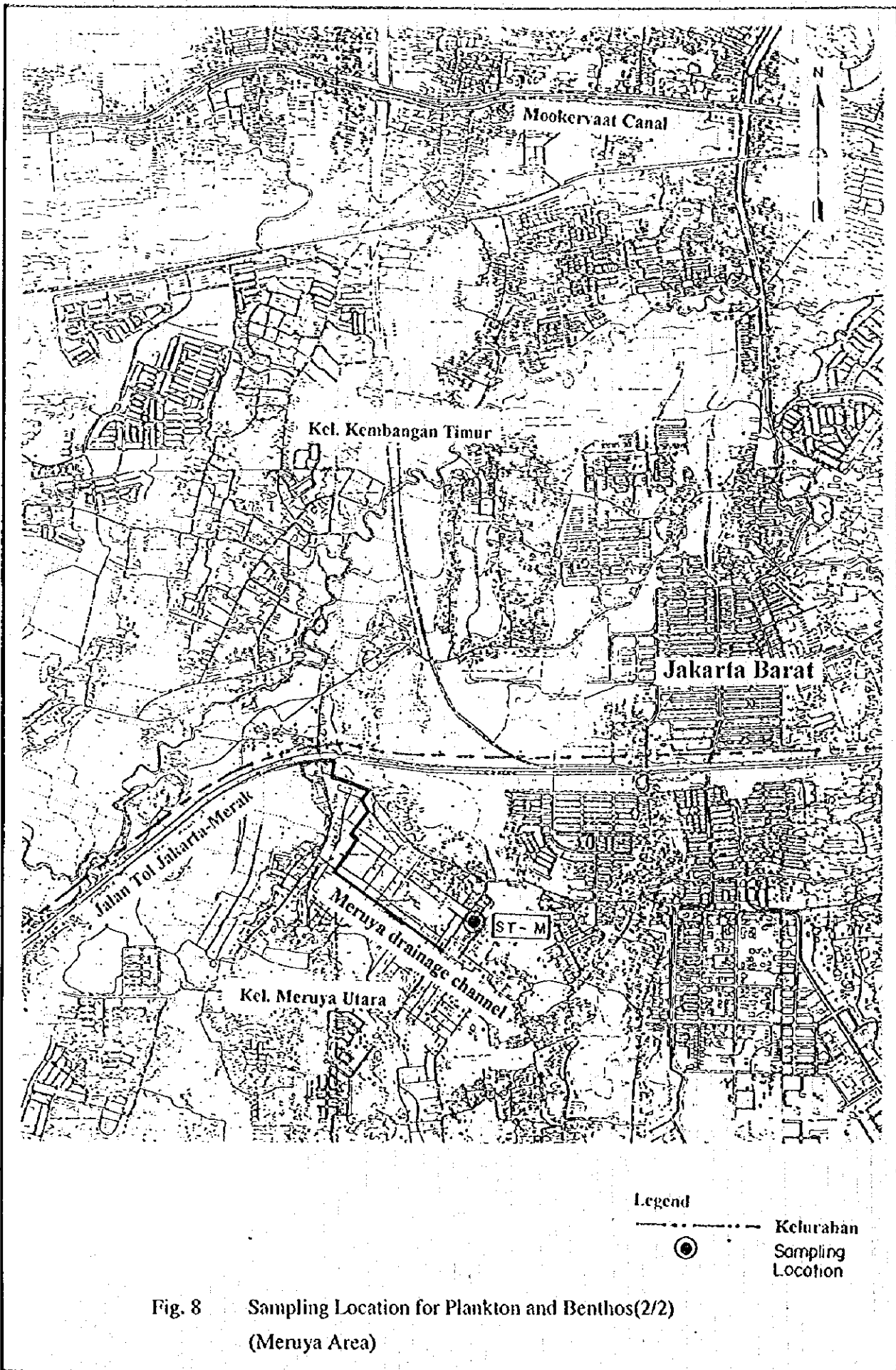
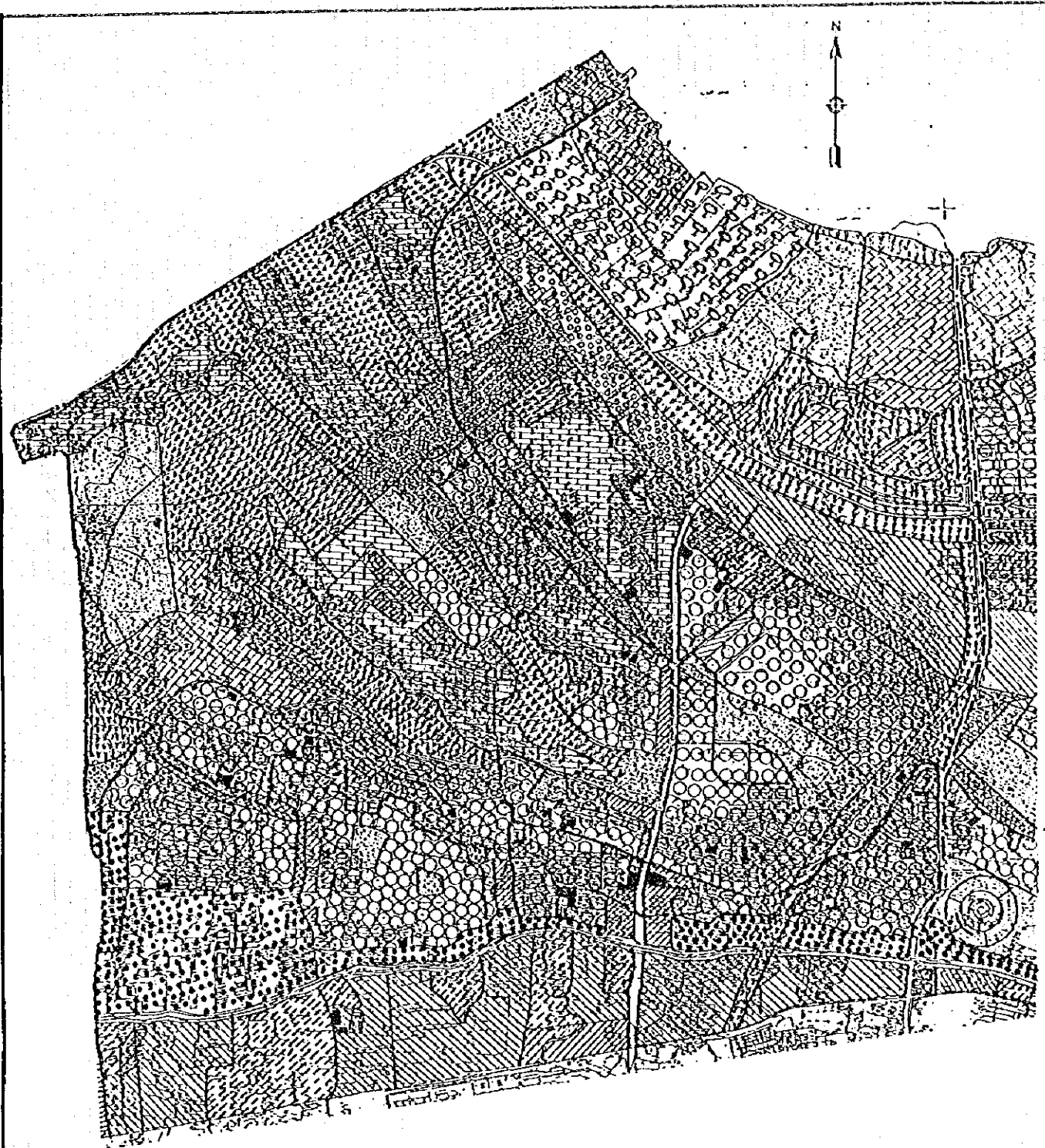














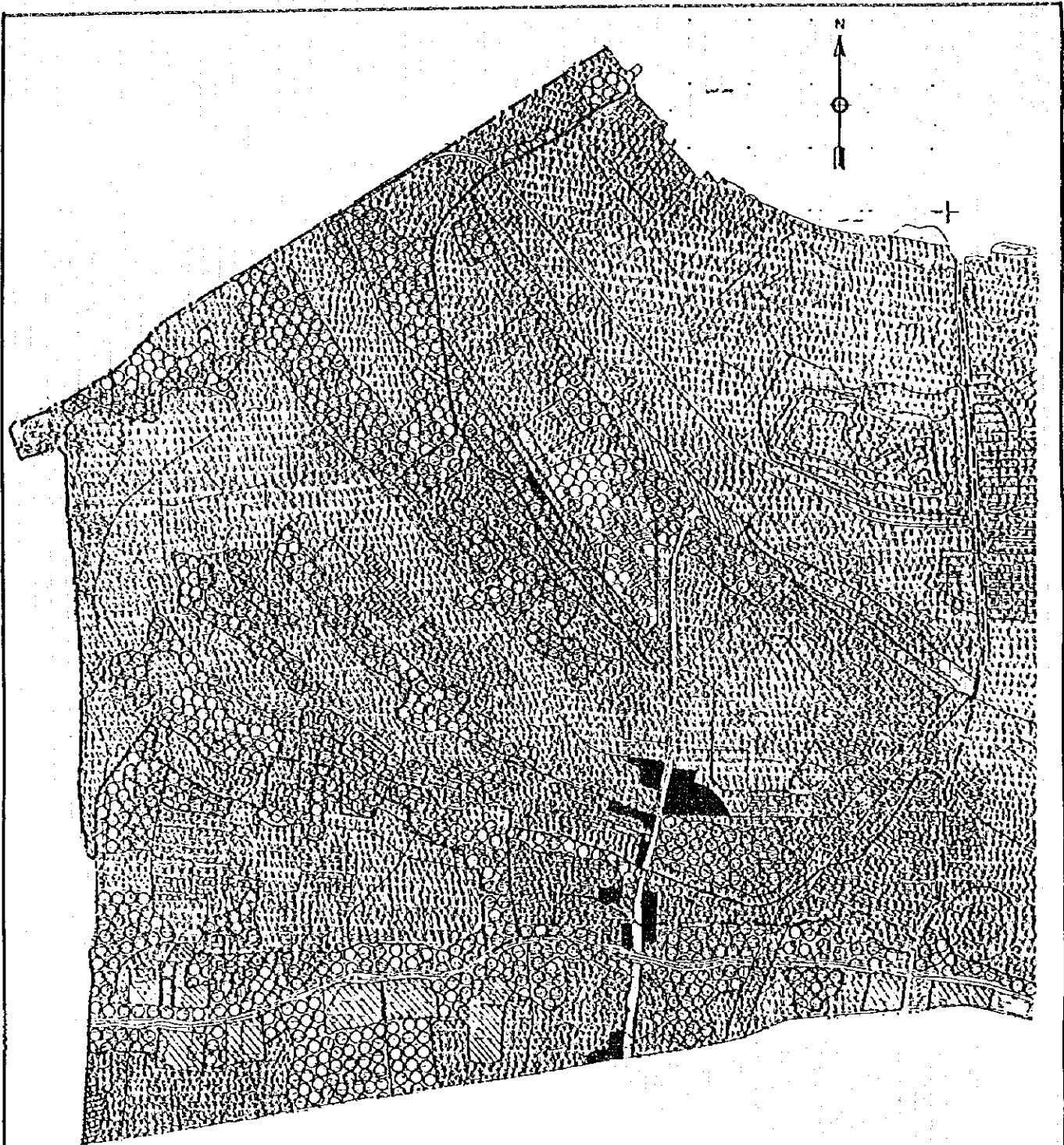
Fig. 8 Sampling Location for Plankton and Benthos(2/2)  
(Meruya Area)



**LEGEND :**

- |   |  |   |
|---|--|---|
|  Residential Area  |  Residence and Public Mixed         |  Industry and Commercial Mixed     |
|  Public Facilities |  Residence and Small Industry Mixed |  Estate and Residential Area Mixed |
|  Commercial Area   |  Residence and Small Industry Mixed |  Mangrove Growth Area              |
|  Industrial Area   |  Public Housing Area                |  Green/Agricultural Area           |

**Fig. 9 Land Use in the Project Area(1/2)**  
**Land Use by the Year 2005**



LEGEND:

- |                   |                                    |                                   |
|-------------------|------------------------------------|-----------------------------------|
| Residential Area  | Residence and Public Mixed         | Industry and Commercial Mixed     |
| Public Facilities | Residence and Small Industry Mixed | Estate and Residential Area Mixed |
| Commercial Area   | Residence and Small Industry Mixed | Green/Agricultural Area           |
| Industrial Area   | Public Housing Area                |                                   |

Fig. 9 Land Use in the Project Area(2/2)  
Present Land Use

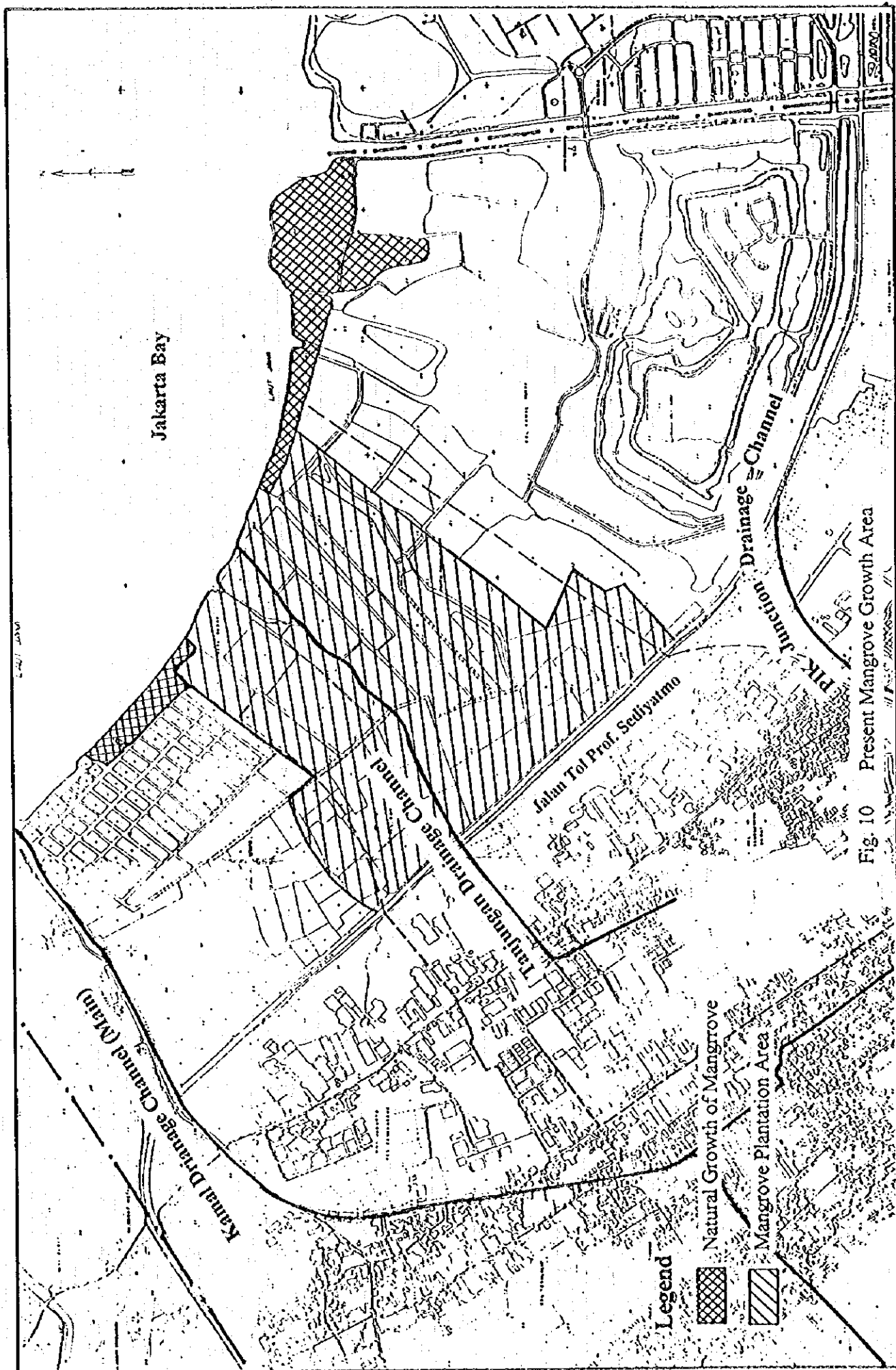


Fig. 10 Present Mangrove Growth Area

Fig. 11 Environmental Impacts During the Pre-construction Period

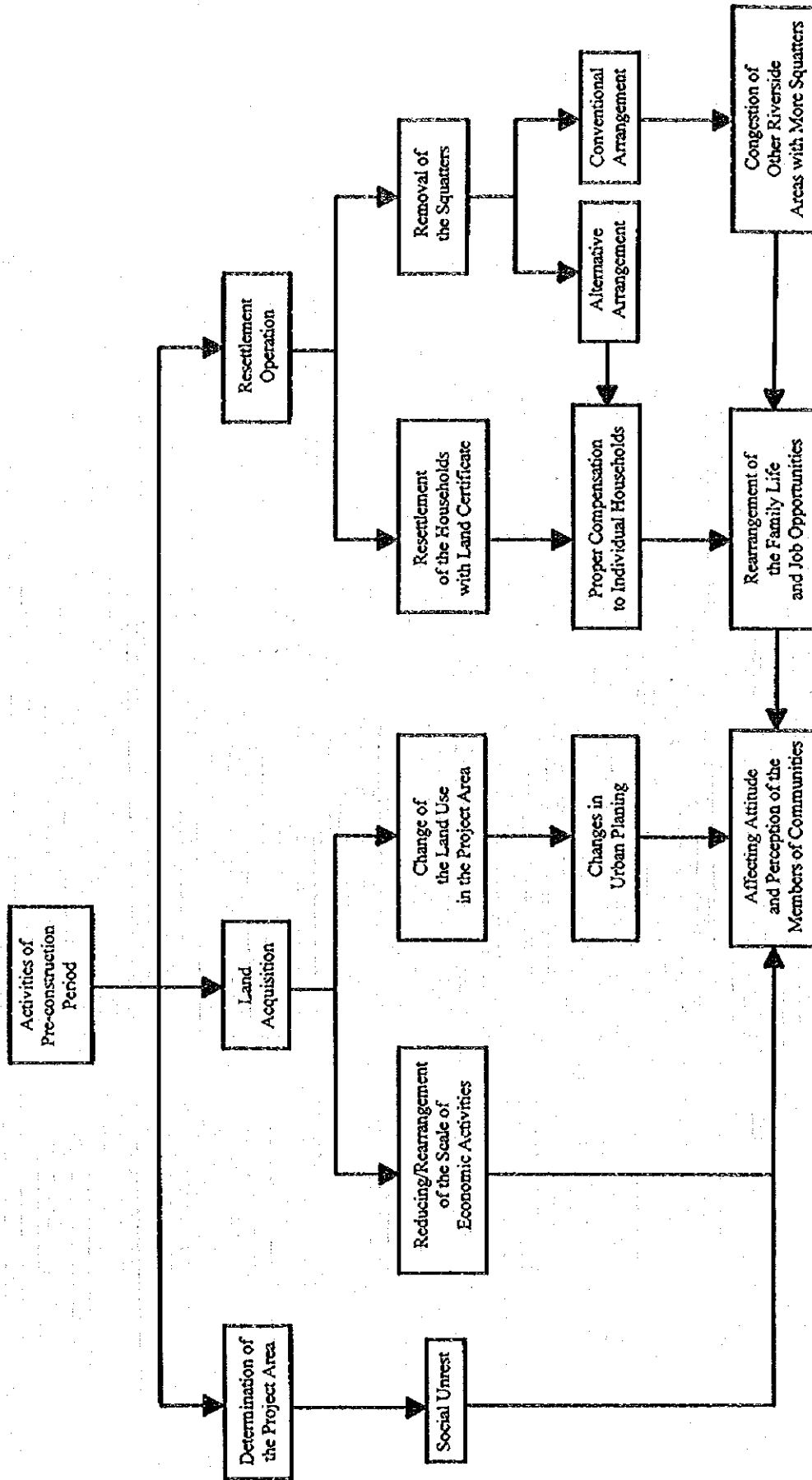


Fig. 12 Environmental Impacts During the Construction Preparation Period

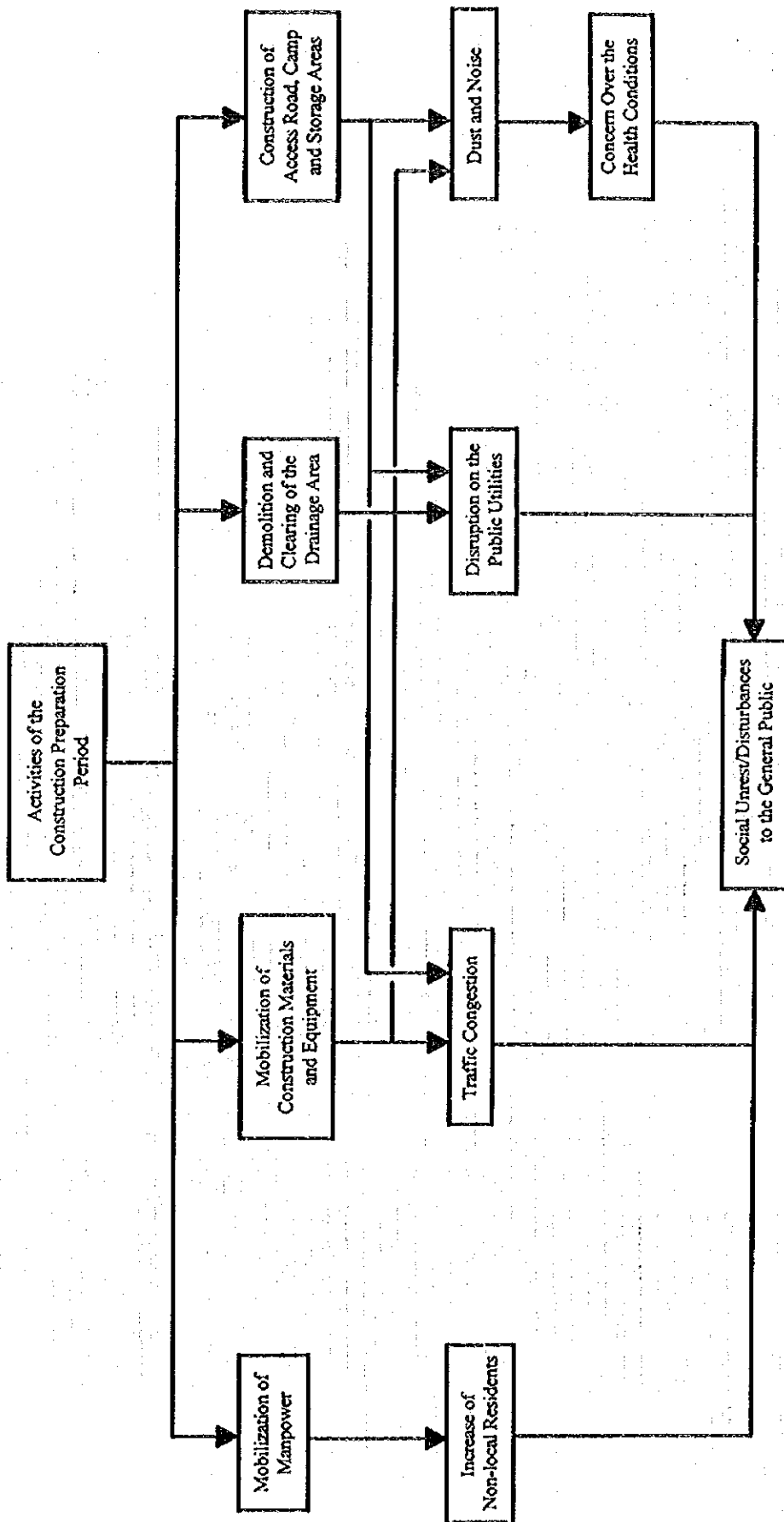


Fig. 13 Environmental Impacts During the Construction Implementation Period

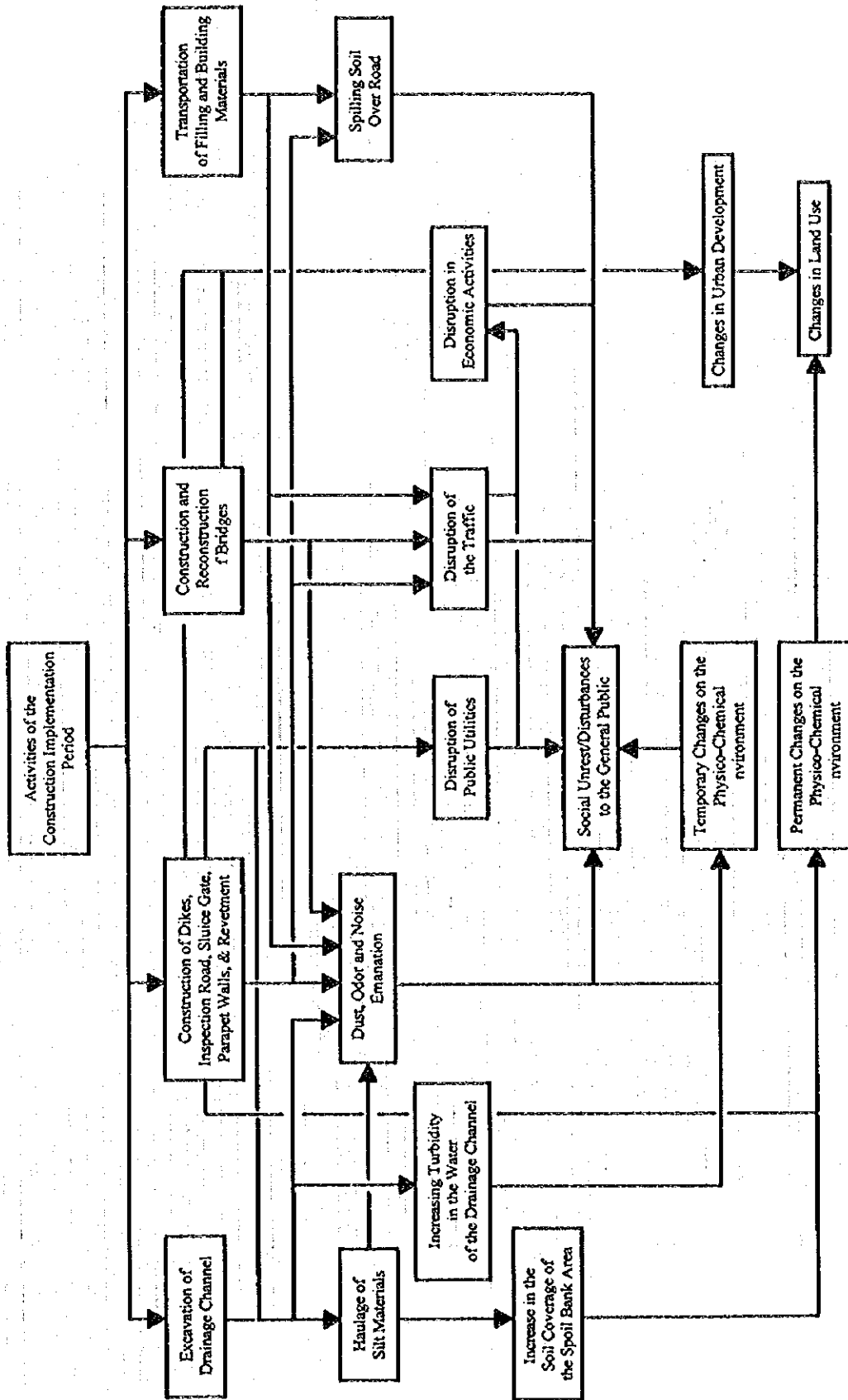


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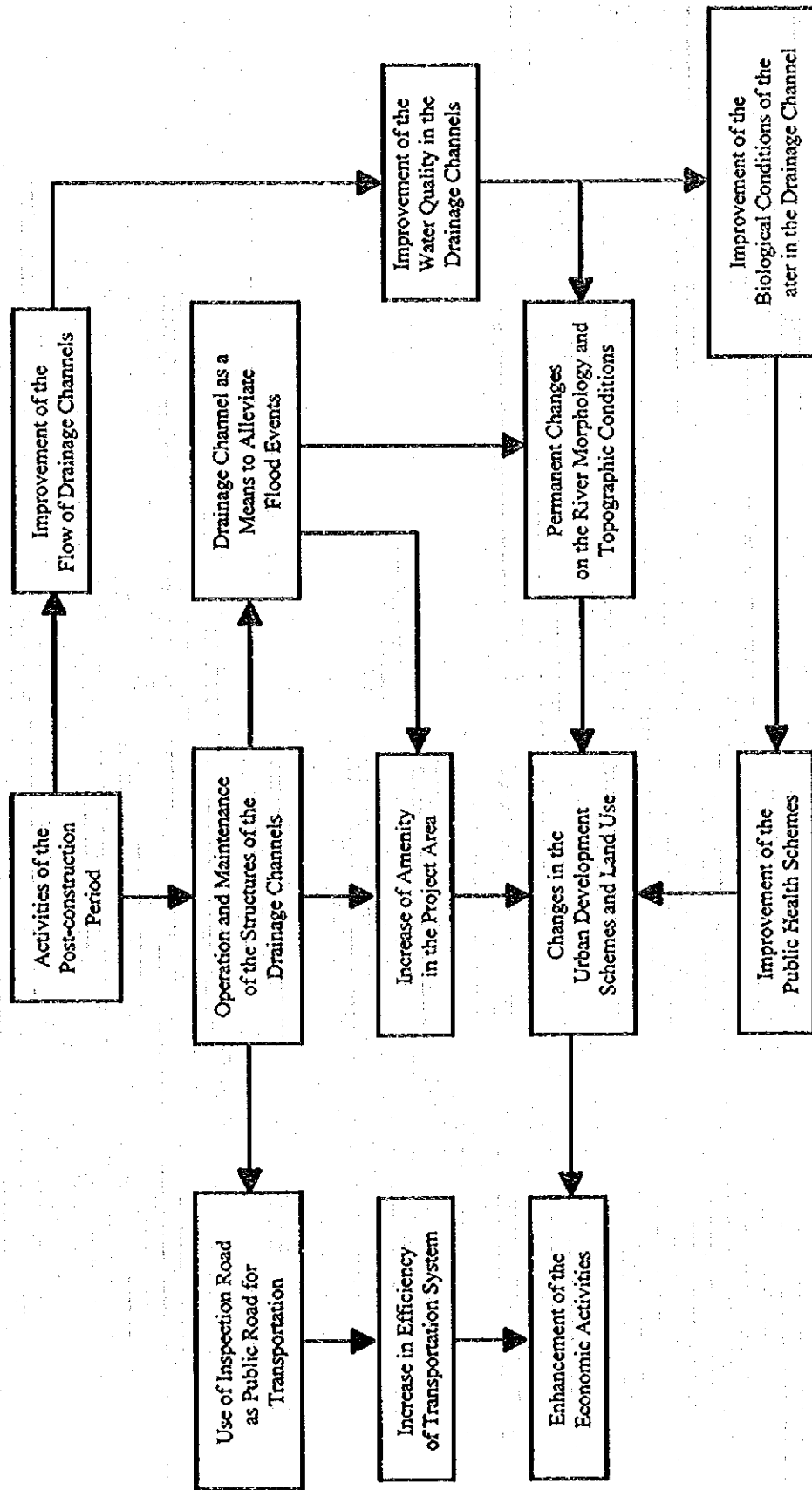




Fig. 15 Subdivision of the Period of Environmental Management Plan

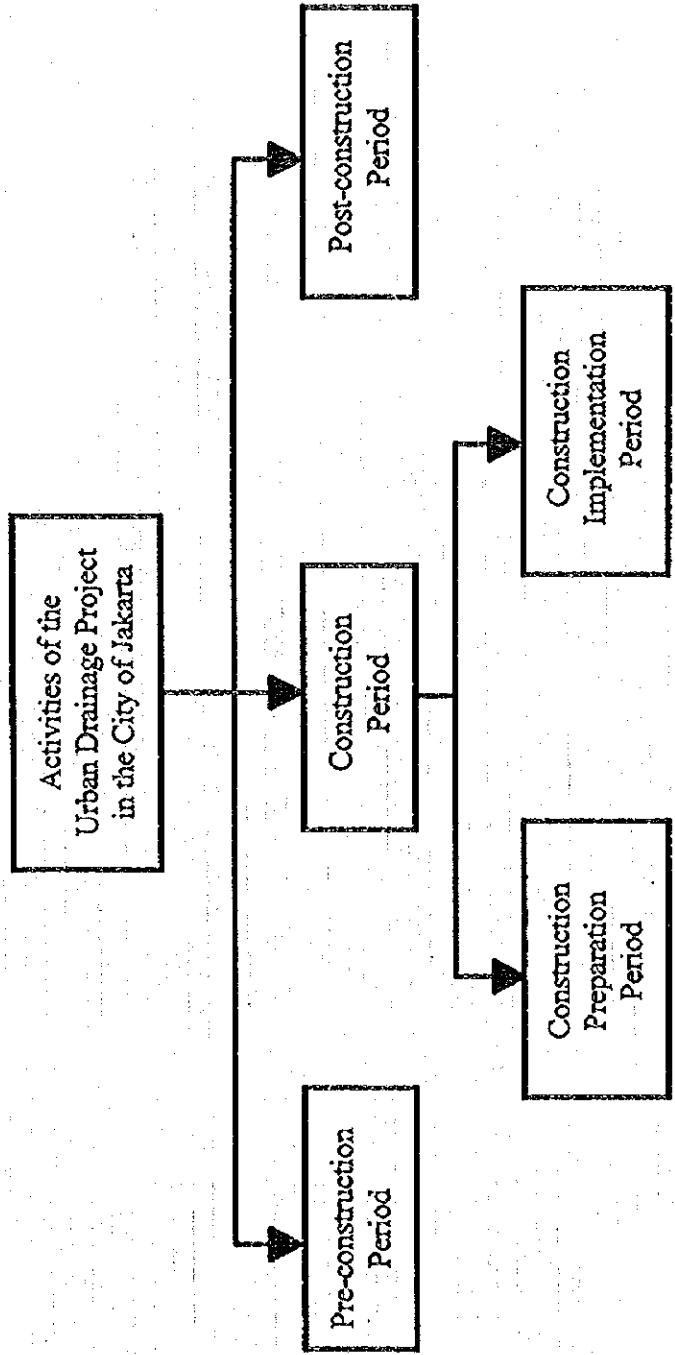


Fig. 16 Pre-construction Period of Environmental Management Plan

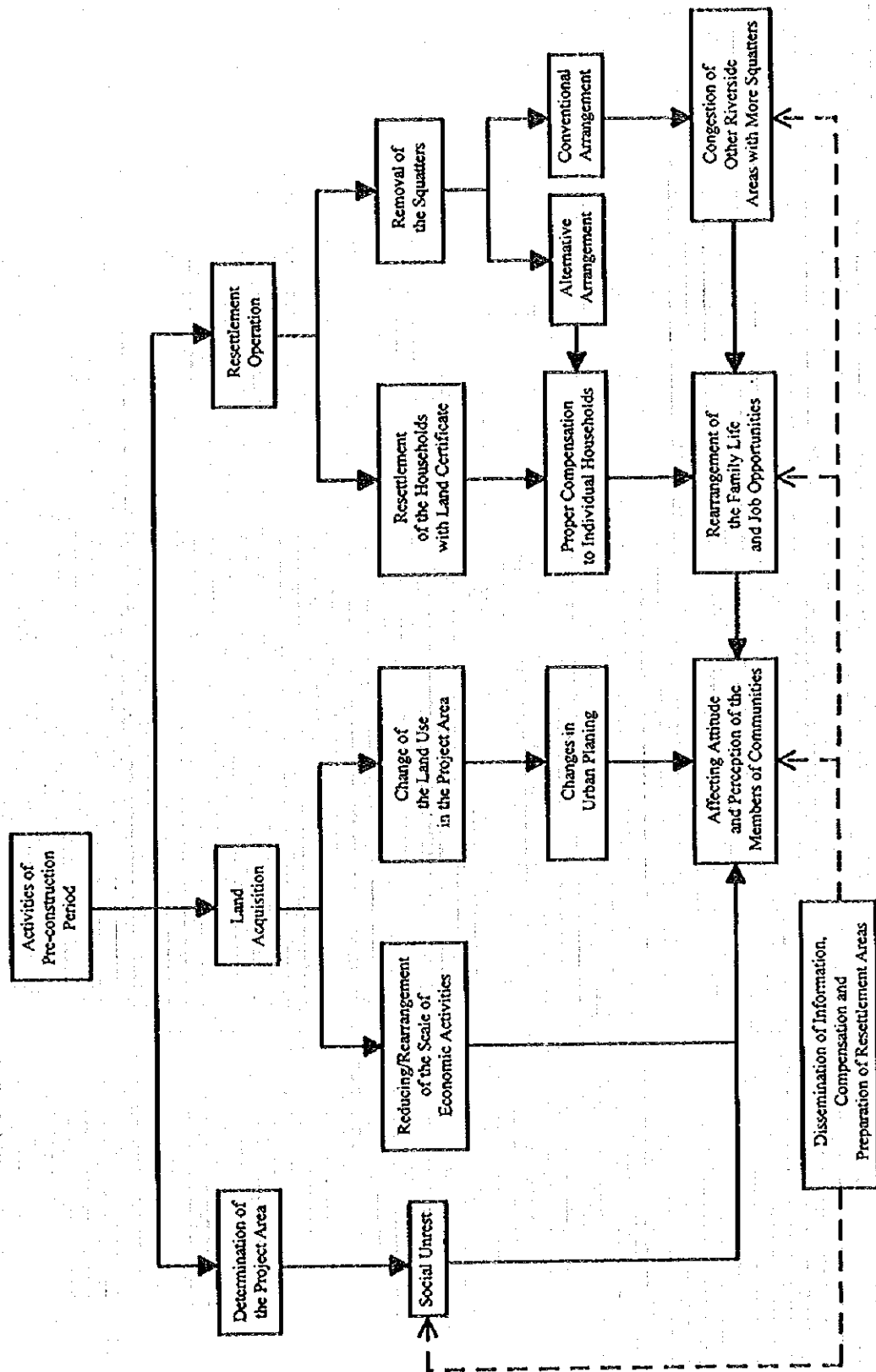


Fig. 17 Construction Preparation Period of Environmental Management Plan

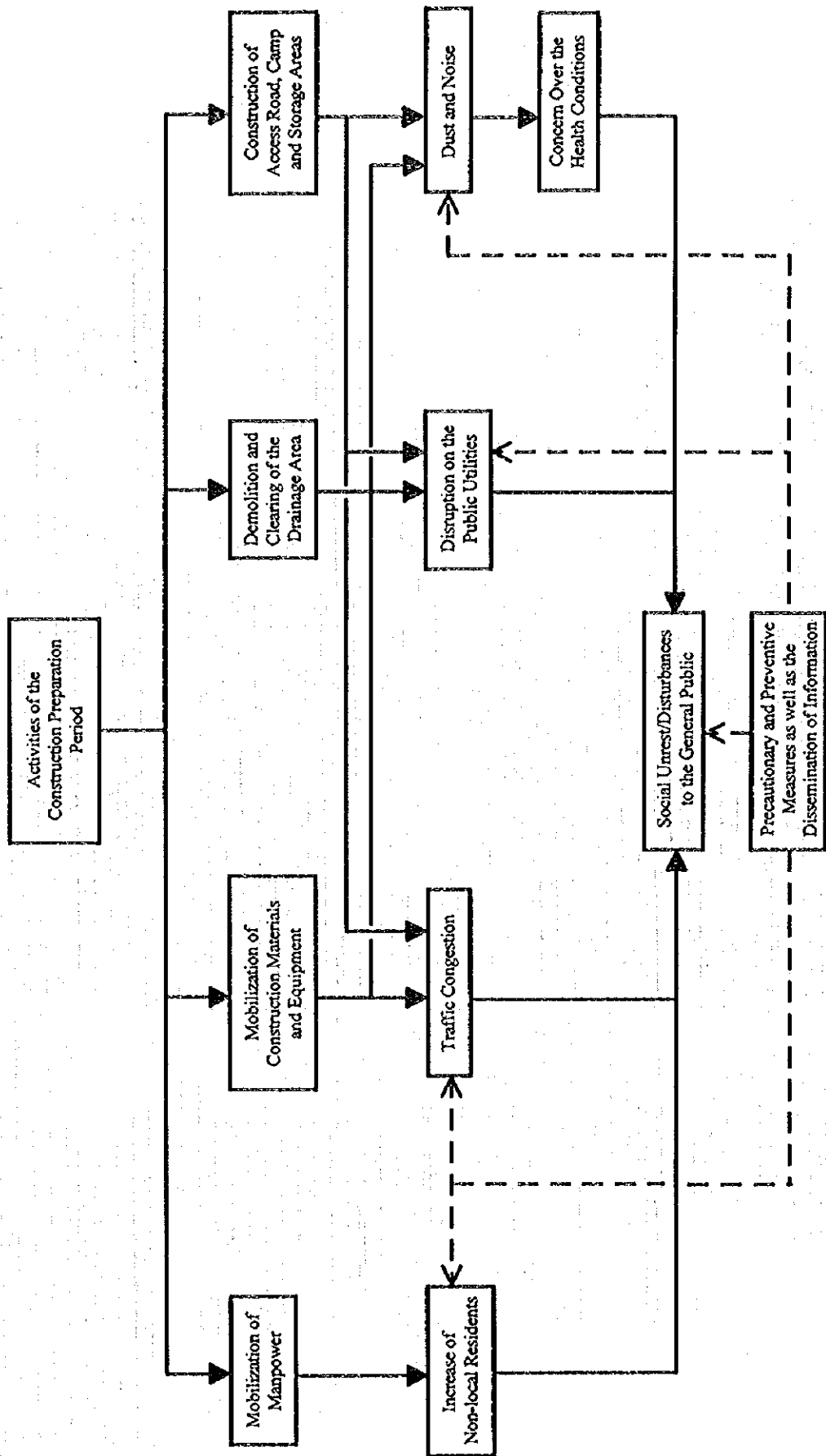


Fig. 18 Construction Implementation Period of Environmental Management Plan

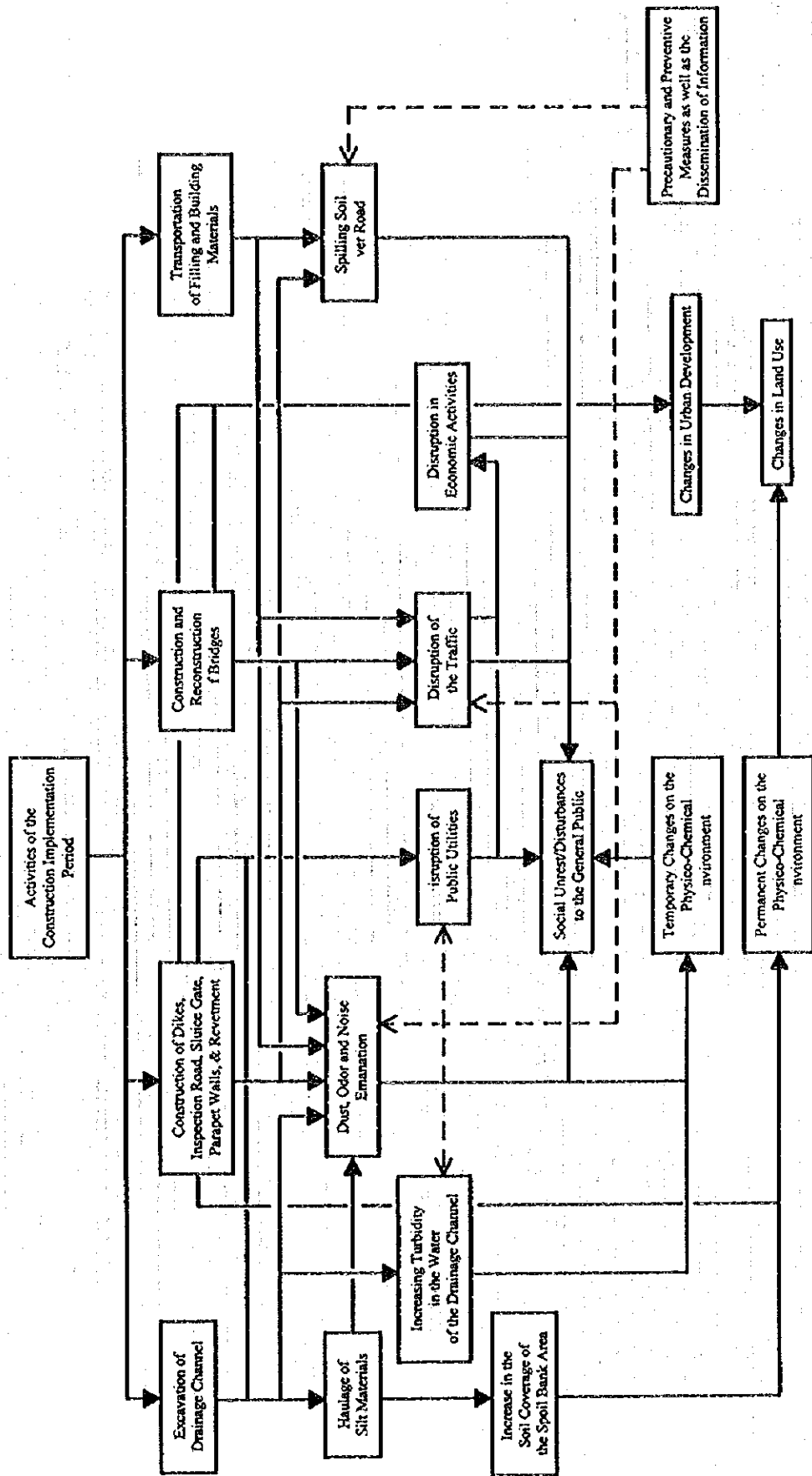
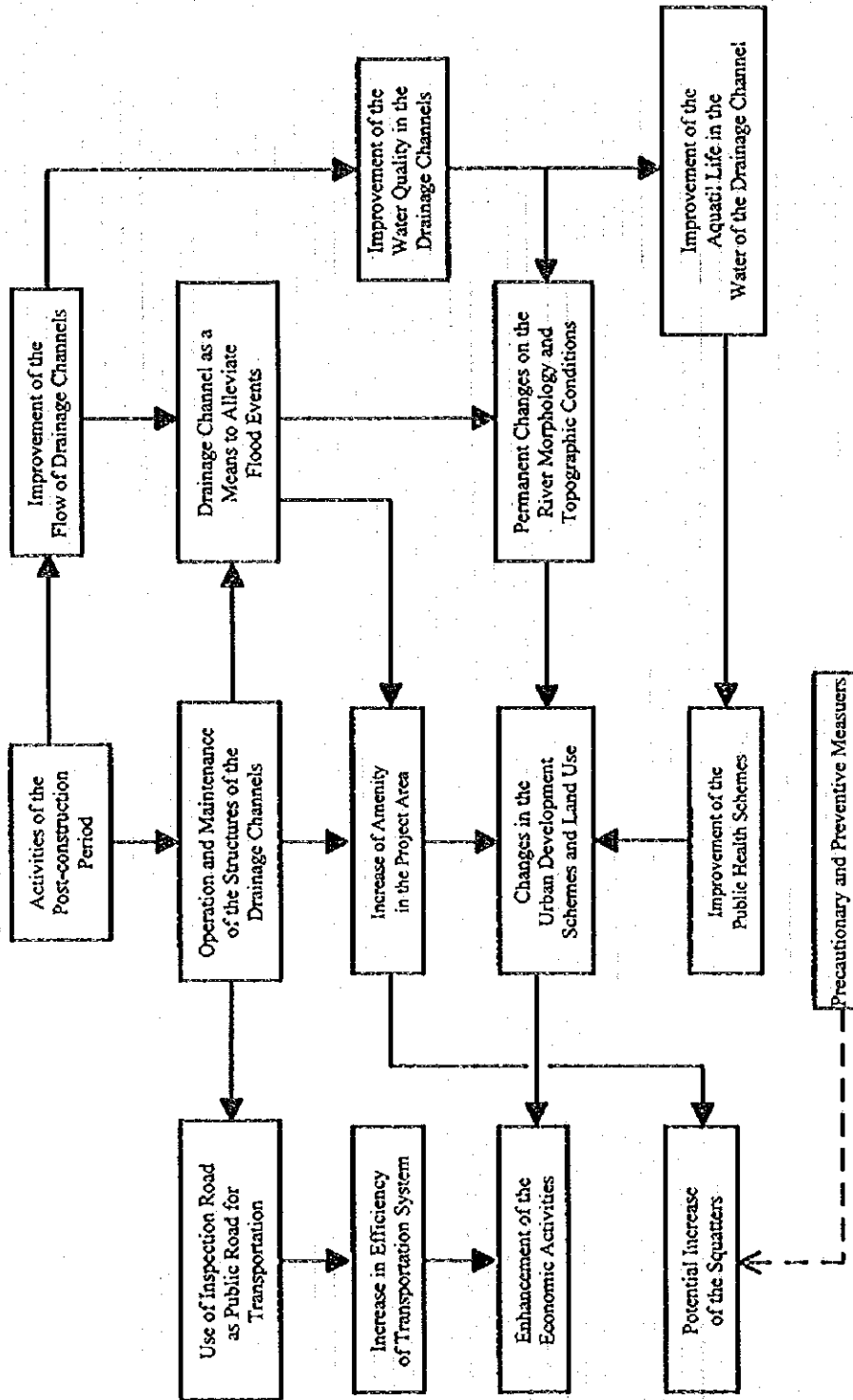


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*No. 11*

*Social Impact Management Plan*



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# 1 INTRODUCTION

## 1.1 Background of the Project

Jakarta, the capital of Indonesia, is undergoing a very rapid urbanization in recent years. This is resulting in an intense population growth that has almost doubled from 4.6 million in 1975 to 8.8 million in 1988. This figure is further expected to reach 12.8 million in the year 2010. Since the start of building the capital city, Jakarta has met with severe flooding problems and the population of the city of Jakarta has been badly affected by the flooding problems almost every rainy season. It is not right to state that the city of Jakarta has already coped with the flood problems by constructing major drainage systems.

The first major project of flood control and drainage system implemented in Jakarta was the West Banjir Canal completed in 1920. In addition, some major flood control and drainage projects were also completed. However, the flood problems still lingered around the city. To manage this, East Banjir Canal was planned and its study was completed in 1972.

These major projects for development of drainage systems have dealt with major rivers flowing through Jakarta. On the other hand, recent rapid urbanization and the resulting changes in land use have further created new flood prone areas not covered by the above two major projects of drainage channel construction works. Such flood prone areas are expected to expand further in the future, particularly along the relatively undeveloped areas in the eastern and western portions of the city.

As a consequence, formulation of an urban drainage development plan, conforming to the present and future land use of Jakarta has become necessary. In response to this, Japan International Cooperation Agency conducted the "Study on Urban Drainage and Wastewater Disposal of the City of Jakarta" (hereinafter referred to as the "JICA Study"). The Study was completed in 1991. The areas subject to the feasibility study have been Cengkareng West, Sepak, Bojon, and Meruya in Jakarta Barat and a portion of Kamal Muara in Jakarta Utara.

The JICA Study comprises a master plan study on urban drainage system and the feasibility studies on respective priority areas for development of drainage system. Its

study area covered 650 km<sup>2</sup>, which is basically divided into six drainage basins of the city of Jakarta. As a result, Cengkareng West, Sepak, Bojon, a portion of Kamal Muara and Meluya Ilir (hereinafter referred to as the "project area") has been selected as a package area urgently required to conduct the JICA Study on urban drainage system for the following reasons:

- (1) Extent and frequency of the flood damages are greater than the other areas;
- (2) Drainage requirement to meet future land development is higher than the other areas;
- (3) Progress rate of urban development is more rapid than the other areas;
- (4) The area has already a very high population density; and
- (5) The income level of residents in the Project area is relatively low.

It was these reasons that CIPTA KARYA, Ministry of Public Works, Indonesia, initiated the project and made a request to implement the study on Detailed Design of the project to the National Planning and Development Board of the Government of Indonesia in 1993. Thus Cengkareng West Area as well as the surrounding areas have therefore been selected to form the project of the "Detailed Design for Urban Drainage Project in the City of Jakarta" (hereinafter referred to as the "study").

It is these areas that the land use patterns have been drastically changed since the completion of the feasibility study. Housing development projects in the project area are licensed on the condition that the drainage facilities of each housing development area have to be constructed by the developers and that these are connected to the nearest major drainage channel. In places, construction of primary drainage channel is also a part of the responsibility of the developers of the housing areas such as in Bojong and Sepak areas.

In the Cengkareng west area, there are a number of low lying areas already purchased by the private enterprises. These areas are subject to land reclamation for further housing development complex. There is no major development of drainage facilities in Meruya area. Thus, Cengkareng west and Meruya areas should face a lack of drainage facilities as there is no major housing development project taking place. Thus, while topographic changes within the housing development areas take place, there is no matching changes on the drainage system take place to the extent that the natural drainage system as a whole is disrupted in places.

Further, because of the development of Outer Ring Road its interchange to the Jalan Tol Prof.Sedyatmo has been constructed to the east of the Cengkareng west area, and the Outer Ring Road has bisected Cengkareng area relatively small area to the east and a relatively large area to the west. Upon completion of the Outer Ring Road, drainage conditions of the Cengkareng area should be drastically changed. As a result of the above housing development projects, and a number of low lying areas have been isolated from the natural drainage system or left intact as no private enterprise is responsible to construct drainage facilities. In the Meruya area, an interchange to Jalan Tol Jakarta Merak has been planned to construct. As a result, natural drainage system in the area is changed. Figure 1 shows the present habitual inundation areas within the project area.

The departure from what was known during the feasibility study period prior to 1991 has therefore been clarified since the commencement of the Study in September 1996. It is therefore these conditions should be taken into account as the Study is conducted. During the period between September 1996 and February 1997, a series of discussions took place among the JICA Study Team, CIPTA KARYA (Ministry of Public Works) and the Department of Sanitation and Environmental Engineering (DPU of DKI Jakarta). As a result, Sepak and Bojong areas have been withdrawn from the project as private developers have a plan to conduct construction works of the drainage facilities in these areas. Thus, the project area has been determined to cover the Cengkareng west in Jakarta Barat including Kamal Muara in Jakarta Utara, and Meruya Utara in Jakarta Barat. Details of the project consisting of improving the existing drainage channels and creating a new drainage are as shown in Fig. 3.

## 1.2 Objectives of the Project

The objectives of the project are to construct adequate urban drainage system in the Cengkareng west and Meruya Utara areas of DKI Jakarta, as shown in Fig. 3. Breakdown of each drainage channel and the catchment areas are shown in Table 1. These drainage channels are planned:

- (1) To protect the project area from habitual floods
- (2) To control the habitual floods by providing drainage facilities
- (3) To minimize damages caused by habitual floods
- (4) To minimize public health hazard induced by flood water
- (5) To minimize the direct damages to the public transportation system and the

indirect damages associated with it causing severe disruptions to the general economic activities of the City of Jakarta

- (6) To make best possible use of the area in relation to housing development upon completion of the project, and
- (7) To make best possible use of the project for the subsequent housing development works.

Thereby the project should successfully eliminate habitual inundation, as is shown in Fig. 1, frequently occurring in the low lying areas within the project area. At the same time, it is possible to increase the environmental quality of living conditions for the welfare of the local residents in the project area. On the other hand, the project involves relocation of more than 1,700 households, including squatters. Thus, it can create side effects in terms of the negative impacts to the social environment in the project area to a large extent and to the natural environment to a small extent. Therefore, appropriate relocation program has to be elaborated while the Environmental Impact Analysis is conducted in order to identify, predict and evaluate measures to mitigate, or to control the negative impacts induced by the project. It is these measures that the local environment is maintained as close to the original level of the environment as possible, or mitigation measures are taken as necessary. It is the intention of the project that eventually overall environmental conditions are improved in the project area through the implementation of the project.

### 1.3 Purpose of the Report

This report is the program for relocation of the local residents subject to relocation upon implementation of the project and this report is designed to provide:

- (1) Detailed information concerning relocation of the local residents subject to relocation. Their present areas of residence, resettlement areas necessary to house them, cost of compensation required for the relocation operation, and the overall Program of the relocation operation. With the supervision of CIPTA KARYA, an executing agency of the project, and the request made by the Department of Sanitation and Environmental Engineering, DKI Jakarta, the implementing agency of the project, the Department of Housing, DPU DKI Jakarta, as the Executing Agency for Relocation Operation and Compensation including acquisition of land for relocation areas conducts entire relocation operation. Thereby those of responsible for decision making in terms of the implementation of the project is

fully informed of the relocation Program.

- (2) A guidance to provide demarcation of the role of the Department of Sanitation Engineering of DPU DKI Jakarta, the Department of Housing, DKI Jakarta, and CIPTA KARYA.
- (3) An overall guidance for relocation operation during the implementation stage for those who implement the relocation operation, and
- (4) Basis of information disseminated to the local residents subject to relocation.





## 2 ORGANIZATION OF PROJECT

### 2.1 Budget Responsibility

CIPTA KARYA is the central government's agency initiated the project and it is therefore functioning as the "Executing Agency" within the framework of the project. Department of Sanitation and Environmental Engineering of the Regional Department of Public Works at DKI Jakarta is the owner of the project and thus it is considered as the "Implementing Agency" of the project .

Housing Department of DKI Jakarta has been functioning as an agency for resettlement operation related to the project executed by DKI Jakarta. Thus, budget responsibility in terms of the entire relocation operation, including inventorying individual houses subject to acquisition, land acquisition, and clearing the acquired land for construction works, disbursing compensation for the local residents subject to relocation, assistance of transportation during the relocation operation, construction works of resettlement areas including low cost housing complex and the after-care of the resettlement areas including monitoring of resettled residents, is mainly with the Department of Housing, DKI Jakarta. However, depending on the result of the negotiations conducted among the central and the local government agencies concerned with the relocation program, Kotamadya Offices of Jakarta Barat and Jakarta Utara may play an important role of the budget responsibility. As a whole, DPU DKI Jakarta is the main organization responsible for coordination of the budget and the works related to the project .

### 2.2 Organizations Concerned with the Resettlement Plan

There are a number of government and non-governmental organizations concerned with the relocation operation as Fig. 14 shows organizations concerned with the relocation operation within the framework of the project . Including the agencies shown in Fig. 14, those concerned with the relocation operation and their major concerns are indicated in Table 22. They are as follows:

#### (1) Organizations executing the project :

- CIPTA KARYA, PU as executing government agency;
- Dept. of Sanitation and Environmental Engineering, DPU DKI Jakarta as

implementing government agency;

- Department Housing, DKI Jakarta as a government agency assisting relocation operation and construction of resettlement areas;

(2) Beneficiary organization and the organizations concerned with the project

- Head of Kotamadya Office of Jakarta Barat and Jakarta Utara;
- Head of Kecamatan directly and indirectly concerned with the project ;
- Head of Kelurahan within the project area;
- Head of Rukun Warga within the project area;
- Head of Rukun Tetangga within the project area;
- Head of the Dept. of Housing, DKI Jakarta;
- Head of the Dept. of Urban Planning, DKI Jakarta;
- Head of the Dept. of Public Health, DKI Jakarta;
- Head of DPU, DKI Jakarta;
- Municipal Inspector of Structures;
- Office of Land Administration;
- Regional Office of BAPEDAL(Environmental Assessment Agency);
- Regional Committee for Relocation and Compensation; and
- Task Force of the Relocation and Compensation;

### 2.3 Duties of the Head of Resettlement Program

In general, duties of the Head of Resettlement Program is as follows but not limited to:

- Consultation with the related offices of Jakarta Barat and Jakarta Utara;
- Consultation with Department of Urban Planning, DKI Jakarta for the demarcation of each drainage channel area and its area for right-of-way according to the Local Government Act of the West Jakarta No.2/1985 regarding Demarcation for Urban Drainage;
- Invitation and consultation with the Regional Office of National Land Administration in Jakarta Barat and Jakarta Utara for the survey result of acquired land. Thereby the Regional Office of National Land Administration in Jakarta Barat and Jakarta Utara will declare the acquired land as state land in the name of the Head of Land Registration. The procedure is further approved by the Head of National Land Administration;
- Dissemination of information on the resettlement arrangement such as the time table

- of land acquisition, taxation process, measurement of individual houses for inventory of compensation, to the local residents subject to relocation;
- Notification to the heads of Kelurahan, Rukun Warga and Rukun Tattanga for assistance and supervision of land clearing operation;
  - Estimate actual payment for land acquisition and the cost of compensation based on the evaluation of land prices and the rate of compensation for properties and improvement determined by the Committee for Land Procurement formed within Jakarta Barat and Jakarta Utara;
  - Coordinate with the Assisting Team for Execution of Procurement of Land formed under the Committee for Land Procurement of Jakarta Barat and Jakarta Utara. Duties of the Assisting Team for Execution of Procurement of Land would be :1) to collect data and information on the location of land required to procure for the project , 2) to prepare complete inventory regarding the status of land owners, buildings, and improvement, 3) to prepare detailed map showing the packages of land to be cleared for the project , 4) to estimate the compensation cost of the project , 5) to report to the owner of the project on the troubles and other issues encountered on site and their solutions, 6) to accompany the head of Kecamatan and Kelurahan witnessing the payment of compensations;
  - Negotiate the sum of compensation with those subject to relocation at the witness of the head of Kecamatan, or Kelurahan, as well as Rukun Warga and Rukun Tattanga;
  - Confirmation of the payment and witness of the official hand-over of the acquired land with the attendance of the head of Kecamatan, or Kelurahan, as well as Rukun Warga and Rukun Tattanga;
  - Administration of the cost incurred to the operation of land acquisition and relocation including survey; cost of administration of each local government offices concerning issuing land certificate, mapping and other cost of paper works;
  - Coordinate with the Department of Housing for preparation of resettlement areas and the construction of low cost housing complex including allocation of unit to those entitled to moving into the resettlement area(s) and supervision of actual moving operation;
  - Arrange issuing official certificate of resettlement for those subject to resettlement with the Regional Office of Land Administration in Jakarta Barat and Jakarta Utara;
  - Dissemination of information on the result of land acquisition and relocation operation to those related to the project including heads of Kelurahan, Rukun Warga and Rukun Tattanga;

#### 2.4 Laws and Regulations Related to the Resettlement Program

There are a number of laws and regulations related to relocation of the local residents as follows:

- (1) Act No.5 of 1974 concerning Basic Provisions for Local Government (State gazette of the Year 1974 No.38, Supplement to the State Gazette No.3,037);
- (2) Act No.5 of 1960 concerning Basic Regulation for Agricultural Land Affairs (State Gazette of the Year 1960 No.104, Supplement to the State Gazette No.2,043);
- (3) Act No.4 of 1982 concerning Basic Regulation for Basic Provision for Management of the Living Environment;
- (4) Act No.24 of the Year 1992 Concerning Spatial Planning;
- (5) Government Regulation No.51 of the Year 1993 concerning Environmental Impact Assessment;
- (6) Presidential Decree No.55 of the Year 1993 concerning Regulation of Land Acquisition;
- (7) Ministerial Regulation of the Ministry of Home Affairs No.15 of the Year 1975 concerning Definition of the System of Land Acquisition;
- (8) Ministerial Regulation of the Ministry of Home Affairs No.2 of the Year 1985 concerning land Procurement System for the Development Project in the Area of Kecamatan;
- (9) Circular Letter of the Director of Directorate General of Agrarian Reform, No.590 of the Year 1985 concerning the Guideline for Implementation of the Ministerial Regulation No.2 of the Year 1985.
- (10) Circular Letter of the Director of Directorate General of Internal Revenue, No.SE-SI/A1985 concerning the land Procurement for Development Project up to 5 ha of Land Area for Development Project;
- (11) Ministerial Decree of the Ministry of Public Works, No.467/KPTS/1985 concerning the Guideline of the Implementation of Land Procurement System for the Development Project in the Area of Kecamatan Owned by Public Works Department;
- (12) Ministerial Regulation of the Ministry of Home Affairs, No.181.1/7944/AGR, dated September 7, 1981 concerning Prohibition Order to Use the Army for Implementation of the Land Acquisition for Public Use;
- (13) Jakarta Mayor's Decree NO.590/1491 Year 1991, regarding Basic Price Decision of Land in West and North Jakarta Municipalities for Budget Year 1991/1992;
- (14) Director General of Human Settlement's Decree No.200/KPTS/CK/1989 dated,

June 9, 1989 regarding Unit Price Decision per m<sup>2</sup> of New Building;

- (15) Joint Decree of the Ministry of Public Works and the Ministry of Finance, No.44/KPB/1984-215/KMK/.01/1984, dated March 5, 1984 concerning the Value of Building Depreciation;
- (16) Ministerial Decree of the Ministry of Finance, No.961/KMK.04/1988 concerning the Specific Value of Supporting Depreciation for Building that not included in the Unit Price/m<sup>2</sup> of New Building;
- (17) Government Regulation of the Republic of Indonesia, No.35 of the Year 1991 concerning River.



### 3 CHARACTERISTICS OF LOCAL ENVIRONMENT

#### 3.1 Socio-economic Survey of the Project Area

##### 3.1.1 Interview survey of the local residents subject to relocation

As shown in Figs 7 to 13 and Table 13, interview survey was conducted in the areas along the drainage channels subject to improvement within the framework of the project. Interview survey was conducted by a method of visiting households which are affected by the project. Individual household, normally on the side of the drainage channel has been visited by enumerators with questionnaire prepared specifically for the purpose of the project. Annex II and III show the questionnaire used for the survey for those with land certificate and for the squatters respectively.

##### 3.1.2 Characteristics of the local residents

There are three different types of residents within the project area that are affected by the project as follows:

- Legal Residents;  
The local residents with land certificate, either owning land or renting land that are registered at the Office of Land Administration, are generally considered as legal residents in the country;
- Squatters with RW/RT Number;  
The squatters with resident status who possess a permission to live in their present residential area normally belongs to the Department of Public Works. The permission to stay is issued by the nearest neighborhood organization of Rukun Warga and Rukun Tattange. Thus, they have "address" and establish themselves within the kelurahan they live. In a number of cases, Kelurahan Office also issues a letter of recognition to live in the riverside areas. Thus they are classified as "quasi-legal" residents with the right of way of their land belonging to PU. Those who have built their houses over the riverside area and private land are also classified in this category.
- Squatters without RW/RT Number;  
They are the people who newly arrived and have not established themselves in the kelurahan or have never been able to obtain RW/RT numbers for some reasons.



Thus, they are classified as illegal residents.

### 3.1.3 Legal residents

General population statistics of the local residents with land certificate within the project area is shown in Table 2. Overall population affected by the project is 264,150. However, the population in Kel. Kamal in Kec. Kalideres, Jakarta Barat are not directly affected by the project .

There are 211 households subject to relocation within the project area as shown in Table 14.b. On the other hand, as Table 3.a indicates, level of education they have attained is relatively high and as per Table 3.b, their occupation is dominated by factory works and retail business. Level of income is comparatively high, as more than 50 % of the population earn 2 - 3 time larger amount of salary than the minimum wage prevailing in Jakarta as shown in Table 3.c.

Predominantly Moslem population of Java/Sunda origin and Betawi/Jakarta origin dominate the characteristics of the religious and ethnic group of the population in the project area as shown in Table 3.f and g.

Majority of the population in the project area live in the size of house with a floor space of more than 80 m<sup>2</sup> as shown in Table 4.a. Their house is essentially permanent structure, as shown in the whole of Table 3. Their source water for drinking and the source of water for washing is separated, as shown in Table 4.h. and Table 4.i. Local residents are making use of the riverside area for domestic purpose despite their permanent nature of house with a complete electrification achieved to date. However, energy of cooking is still depending on kerosene. This implies that the public utility development in this area is almost totally inadequate.

On the other hand, their average area of land is 112 m<sup>2</sup>, excluding Meruya Utara, as indicated by Table 3. This would mean that the local households are living in a comparatively small housing plot. The project area is therefore congested and this is well expressed by Table 2 that shows the population density of more than 5,000 persons/sq.km. Since they do not keep domestic animals except for a few chickens, and since essentially no farming is practiced, the area is highly congested urban residential areas.

Despite the fact that less than 50 % of the local residents explains that they are affected by the flood frequently, they demand flood should be controlled as it poses unhappy feeling among the local residents. Thus, their opinion on the implementation of the project is positive. This is also expressed in Table 6.f that the 99 % of the local residents are willing to accept the project and that they would relocate in the areas adjacent to their present residential areas.

#### 3.1.4 "Quasi-legal" residents and the squatters

##### (1) "Quasi-Legal" Residents

The Residents with resident status are those who have no formal land certificate but some sort of recognition given by the local government for resident status. The recognition, or certificate of the sale of improvement conducted on the riverside areas has a long history of its creation.

Someone who started to make use of the riverside area as his/her temporary living plot has transferred to others with payment. The party who intended to pay for obtaining living space built on the riverside area make use of it for residential or commercial purposes. Transfer of such living space has been traditionally practiced during the past few decades. During the process of transferring such living spaces, unknown third party would demand evacuation of the living space, or demand payment if they desire to live in the place continuously. Because of a large number of troubles involved in the process of transferring living spaces built on the riverside areas in DKI Jakarta, local government office, usually Kelurahan office, or the neighborhood organization of Rukun Warga and Rukun Tattanga began mediating the dispute and eventually determined to issue a letter of recognition of the payment made for the living space between two parties. Thereby no third party can interrupt and cause further dispute over the right of the use of such living space.

Depending on the owner's connection to the local community, the rights of the use of living space is recognized by a letter of recognition of the sales of improvement issued by the different level of the local organization of neighborhood association such as Rukun Warga, or the local government of Kecamatan. Upon issue of the letter of recognition of the sales of the living space built on the riverside area, the owner of such rights is given formal tag of address issued by the Rukun Warga office. Thereby the household is recognized as a member of neighborhood organization and given other privileges including electricity supply and telephone as they can afford to pay the bill.

(2) Illegal residents

The Squatters are explained as the residents illegally using a portion of land belonging to PU without permission of the owner of land. However, as they can afford to pay for a living space built on the riverside area, they will do so in order to obtain resident status. Thereby the purely illegal residents will become member of the local community over time. Those who have just arrived in the riverside area are therefore illegal residents. It is also possible that those who have never successfully established themselves in the present living area remain as illegal residents.

(3) Standard of living of the "Quasi-legal" residents and the squatters

Level of education they attained is comparatively high as a few percents of university graduate and more than 20 % of senior high school graduates are included. In many respects, they are considered as essential work force for the industries in Jakarta as is indicated in Table 8.a and b. Fishermen are living in the areas to the north of Jl.Tol.Prof.Sedyatmo. They own fishing boats and keep them in the area around the mouth of the Kamal drainage channel (main). Some are engaging aquaculture or fishing in Jakarta Bay.

Income of the Residents with resident status and the squatters is on the same level of minimum wage prevailing in Jakarta, or equivalent amount derived from grocery shop's turn-over. However, more than 20 % of the Residents with resident status and the squatters earn 2 - 3 time large income than the rest of the Residents with resident status and the squatters. This is compared to the 37 % of local Residents with land certificate. Very few are engaged in full-time agricultural activities as shown in Table 8.c.

Predominantly Moslem population of the Residents with resident status and the squatters are Java/Sunda origin mixed with the order of Betawi/Jakarta, Bugis, Sumatran, and others. However, 75 % of the ethnic composition of the Residents with resident status and the squatters is predominantly the same as that of the local Residents with land certificate. This would mean that the relocation of the Residents with resident status and the squatters to remote area face difficulties as their attachment to land is the present area of residence to a large extent.

As indicated in Table 9, floor space of 50 - 60 m<sup>2</sup> per family with relatively permanent, or semi-permanent nature of building imply that they have been living in the congested area for a considerable long period of time. As indicated in Table 12.b, 77 % of the

Residents with resident status and the squatters began living in the present area before 1990. It is therefore possible to consider that their attachment to the present living area has grown strong since.

Their source of water for drinking and the source of water for washing is separated while the surrounding areas are used for solid waste disposal. Drainage channels are by all means made best use of for sewage disposal. Energy for cooking is predominantly kerosene while energy for lighting is supplied with electricity as shown in Table 9.k. This implies that the Residents with resident status and the squatters have been supported by the public utility. This would imply that the Residents with resident status and the squatters are considered as "good customers with legal status", or at least they are considered affluent enough to pay the electricity bill.

The Residents with resident status and the squatters suffer from the habitual inundation of the project area as shown in Fig. 1. They agree to relocate upon implementation of the project. Since they have established in the area for a number of years, moving out to the nearest possible place is their option so as to be able to maintain their present job opportunities.

### 3.2 Environmental Conditions of the Project Area

#### 3.2.1 Physico-chemical environment

Topographic condition of the project area is very flat and the altitude is between 8-0 m from the mean sea level. Wetland area was converted to rice paddy during the past years. Changing the rice paddy as well as swampy patches to residential area is a recent phenomenon of urbanization in this part of Jakarta.

There are low lying areas within the project area. These areas appear to be the ancient river bed area encircled with sand bars, or natural embankment. Despite the fact that the rivers cut through these natural embankment, a few patches remained as low lying areas, or swamp in places.

There have been natural streams with near-flat gradient used for the source of water supply for agricultural activities. These rivers have been changed to urban drainage channels. Thus, water quality in the streams within the project area is not suitable for irrigation or aquaculture at the moment.

### 3.2.2 Biological environment

There is no noticeable biological environment remaining in the project area except for the swamp of about 56 ha to the south of the Kamal drainage channel (main). Because of the heavy housing development in the surrounding areas, there is no water fowls or aquatic life is observed in the area.

The northern portion of the project area is on the coast of Jakarta Bay and Mangrove Forest lines up the boundary. However, because the water in Jakarta Bay is heavily polluted with industrial and domestic waste, essentially no sign of bird, wildlife, or aquatic life is traced in the area.

On the other hand, there are a large number of commercially operated fish ponds in the coastal area. The area is considered as semi-natural environment for aquatic life. One of the drainage channels within the framework of the project is planned to put in this area and the area is bisected by the drainage channel. Land acquisition and the compensation to the fish pond owners will be the only way to compensate the permanent changes of the natural conditions of the area.

### 3.2.3 Social environment

Conditions of the social environment of the areas directly affected by the construction works of the drainage channels are congested and the population density is more than 5,000 persons per km<sup>2</sup> as shown in Table 2. Size of the houses in the project areas are relatively small without gardens as the average size of plot and the average size of floor space of the houses are nearly identical each other.

Size of the street in the project area is very small. There are a large number of streets that can not go through with a small car. It implies that most of the project area has been developed as agricultural village long time ago. Urbanization of the project area took place in the villages and there have been no major road development works in the past years. Thus, the residential areas adjacent to the Saluran Cengkareng drainage channel or the Kamal drainage channel (main and branch) have remained congested with narrow streets.

Because of the lack of garbage collection, solid waste is piled up in the some

areas within the residential area, or finds their way out to the drainage channels. There is no piped water supply system but the municipal water enterprise deliver drinking water from door to door at a nominal charge for transportation, which is conducted by manual labor. Recent development of housing areas and shopping malls are interlaced with heavily congested residential areas.

To the north of the project area, the border areas between Jakarta Barat and Jakarta Utara are featured with small to medium scale of factories or warehouses as well as other business establishments forming a business district within the project area.

There are a number of mosques, cemeteries within the project area. However, these areas are of no culturally, religiously or scientifically important to the local communities. There will be no such activities significantly affected by the project .

The swamp area of 56 ha to the south of the Kamal drainage channel (main) is a largest area with natural vegetation within the project area. To some extent, the area holds aesthetic value of Cengkareng West area. However, the area has already been sold out to a private enterprise for residential development and it is also out side of the area directly affected by the project .

### 3.3 Criteria of Relocation of the Local Households with Land Certificate

As shown in Fig 16, there are three cases that the land owners are affected by the project . Thus, criteria for compensation of the land owners affected by the project are set out as follows:

(a) Case 1;

As shown in the (1) of Fig. 16, the case where entire plot and building are located inside of the boundary of drainage channel area will be fully compensated for all of the property lost to the drainage channel area.

(b) Case 2;

As shown in the (2) of Fig. 16, there will be a number of cases where a portion of land and building are located inside of the boundary of drainage channel. If the remaining land area (ABEF) is less than  $60 \text{ m}^2$  , the land area is considered not wide enough for residential purpose. Thus, the land owner is entitled to claim full compensation of the property.

(c) Case 3;

As shown in the (3) of Fig. 16, there will be a number of cases where a portion of land and building are located inside of the boundary of drainage channel. If the remaining land area (CDEF) is more than 60 m<sup>2</sup>, the land area is considered wide enough for residential purpose. Thus, the land owner is not entitled to claim full compensation of the properties including the improvements.

#### 4 INVENTORY SURVEY

Inventory survey of the local residents subject to relocation including factories, schools, and other buildings has been conducted. Result is presented in Table 13 and corresponding data are shown on Figs. 7 to 13. The result of survey is summarized as follows:

-	Households with Land Certificate	211 households
-	Squatters: Type A (with RW/RT no.)	534 households
	Type B (without RW/RT no.)	908 households
-	Factory and Others	30 places
-	Market Place	3 places
-	Government Office/Public Space	16 places
-	Mosque	6 places
-	Public/Private School	8 places
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	Total No. of Places	1,716 places



