

第8章 本格調査の基本方針

8-1 調査の目的

- (1) プノンベン市及びその近郊を対象とする洪水対策を含む総合的都市排水整備に係るマスタープランを策定する。
- (2) 同計画の中で選定された優先プロジェクトについてフィージビリティ調査を実施する。
- (3) 本件調査を通じて、カンボディア国側カウンターパートに対して技術移転を行う。

8-2 調査対象地域

本件調査の対象地域は、プノンベン市市街地（Daun Penh区、Tuol Kork区、Prampi Makara区、Chamkarmon区の約28km²）を中心に、プノンベン市の洪水防御機能を有する外郭部の輪中堤幹線道路（Kap Srov road、National road No. 3、National road No.4、Prey Sar road、Boeng Tompun road）及びプノンベン市に洪水被害をもたらす河川域（サップ川、バサック川、メコン河の一部）とする。

8-3 基本方針

開発調査を行うにあたって、以下の点に留意して調査を実施する必要がある。

(1) 国際機関、他国援助機関等との連携・調整

プノンベン市の都市排水分野に対しては、フランスをはじめADB、WBなどの国際機関等が種々の協力を実施中もしくは計画中であるため、これら国際機関、他国援助機関と十分に情報交換を行うとともに、協力の重複を避け役割分担を明確にするなど連携を十分に図る必要がある。

(2) 都市排水に係る維持管理体制の強化と人材育成

施設の運営・管理、都市排水に係る組織・制度といったソフトの面について、十分に調査する必要がある。都市排水に係る人材育成や組織・制度作りといったキャパシティービルディングを構築することが重要である。

(3) 調査を通じての技術移転の実施

調査結果の事業化を図るためには、維持管理体制といった先方の実施体制の確立が必

要不可欠であるため、本格調査を通じて先方の実施体制の育成を図るとともに、マスタープラン策定及びフェージビリティ調査の検討段階においても、先方の維持管理体制の取り組み状況を確認しつつ、調査を実施する必要がある。

(4) プノンベン市の財政状況、運営・管理体制の実情に即した計画策定

プノンベン市では財政事情が極めて悪く、人材の質的・量的不足といった問題があることから、事業規模、人員計画を十分考慮して実情に即した計画策定をする必要があり、こういった点を踏まえて、段階的な都市排水整備計画の立案、低コスト技術の導入、人材育成を考慮した維持・管理体制の整備等について十分に調査する必要がある。

(5) プノンベン市の拡大に配慮した計画策定

プノンベン市では、総合的な都市計画は現在のところ存在しておらず、将来の社会経済発展の予測も極めて困難であり、今後農村部からの人口流入も予想されることから、都市の拡大に配慮した計画策定する必要がある。

(6) 住民移転問題

ポンプ場周辺、排水路、輪中堤、市内流入河川の堤内地等に不法建築家屋が見られるため、都市排水事業実施には住民移転が予想されることから、この点を十分に配慮して調査を実施する必要がある。

(7) 都市衛生に配慮した計画立案

生活排水は、未処理のまま排水されており排水路に停滞しているほか、ポンプ場からもそのまま排水されているため、周囲の住民に悪影響を及ぼしていると思われるが、今回の調査では、下水処理場の建設といった本格的な下水処理や下水道の整備は対象としないことから、河川からの取水による生活排水の希釈、乾期における排水網の維持流量確保、排水施設に付随する形での排水の一次処理の実施等、可能な範囲で水質汚濁対策を取り入れることを検討する必要がある。

8-4 調査項目

(1) フェーズⅠ：基礎調査及びマスタープランの策定

1) 基礎調査

・既存資料の収集・整理

・現地踏査／実査（都市排水システム、都市排水管理組織、衛生・環境、土地利用、水

質、気象・水文、地質・土質、測量)

- ・基礎調査結果の解析・検討(計画排水量、排水ルート・排水方式、氾濫解析シミュレーション)

2) 総合的都市排水整備マスタープラン(洪水対策含む)の策定

- ・計画諸元の検討
- ・代替案の検討・最適案の選定
- ・施設概略計画策定
- ・非構造物対策の検討
- ・管理運営計画
- ・事業費概算
- ・初期環境調査(IEE)
- ・マスタープラン評価(経済、財務、社会)
- ・段階別実施計画の策定
- ・優先プロジェクトの選定

(2) フェーズⅡ：優先プロジェクトに対するフィージビリティ調査

- ・追加資料の収集・整理等
- ・地質/土質調査・測量
- ・計画諸元の検討
- ・優先プロジェクトの計画策定(施設概略設計、施工計画、管理運営計画、事業費積算・財務計画)
- ・環境影響評価(EIA)
- ・事業評価(経済、財務、社会)
- ・実施計画策定

8-5 調査工程

調査工程は、S/Wで合意したとおり、全体で約18か月とする。全体調査工程は次のとおりである。

8-6 調査団構成

調査団は、おおむね以下の要員により形成される。

- ① 総括
- ② 都市排水・洪水対策

- ③ 水文・水理
- ④ 施設計画／設計
- ⑤ 施工計画／積算
- ⑥ 組織体制整備／法制度
- ⑦ 運営・維持管理計画
- ⑧ 測量
- ⑨ 都市計画
- ⑩ 環境・社会配慮
- ⑪ 経済・財務分析

8-7 調査実施体制

カウンターパート機関は、プノンペン市である。プノンペン市は、カンボディア国政府関係機関と同様に現在復興に向けて事業実施体制を整えつつあるが、財政事情が極めて厳しい状況にあるとともに、人材も質的・量的に不足している状況にあることから、十分な配慮が必要であると思われる。

8-8 調査用資機材

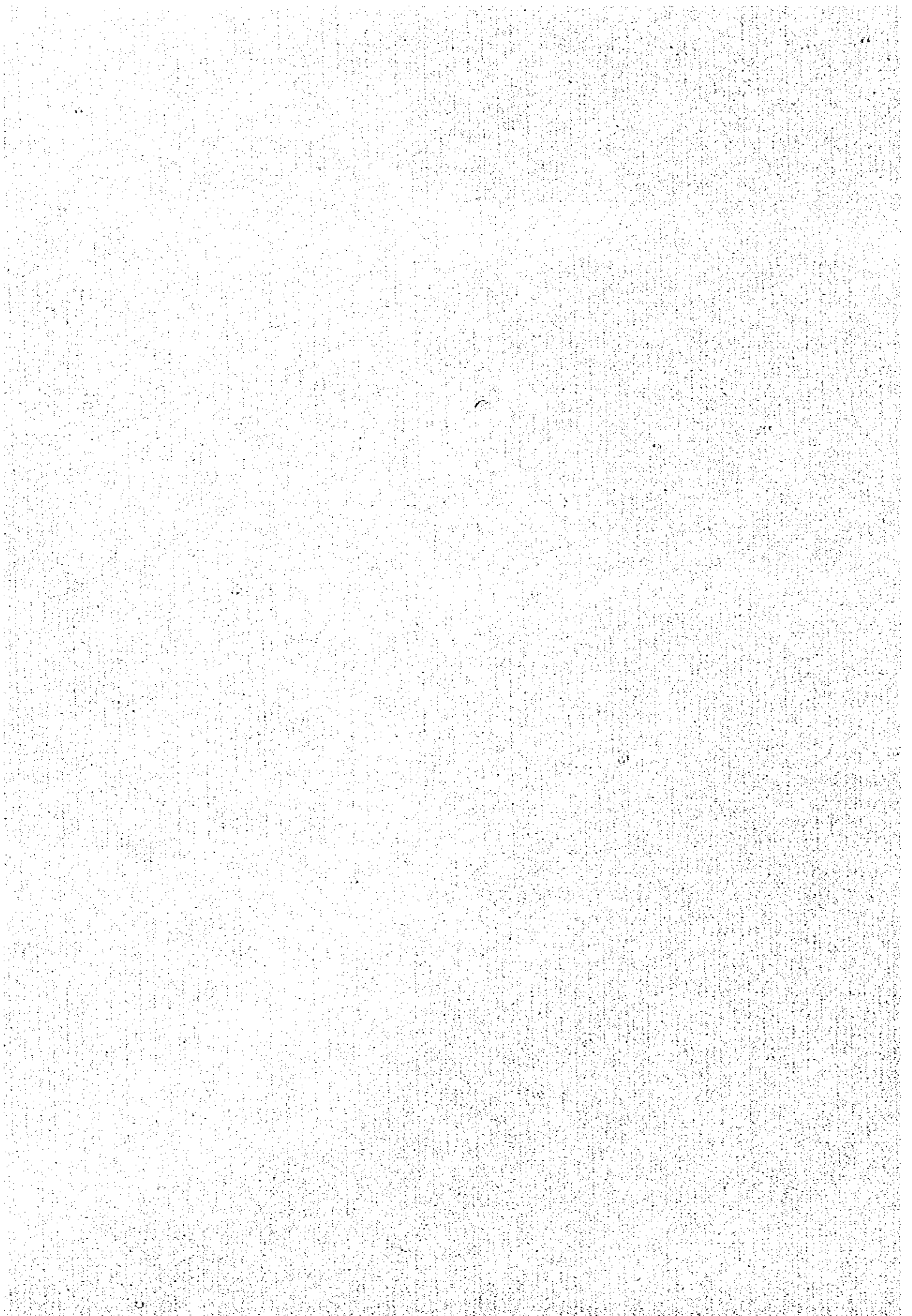
- ① 航空写真
- ② 地形図
- ③ 事務用品
 - ・事務机、椅子、本棚、スタンドライト等の事務用品
 - ・エアコン
 - ・携帯電話（加入料込み）
 - ・ファクシミリ
 - ・コピー機
 - ・パソコン（プリンタ、ソフトウェア含む）

8-9 ローカルコンサルタント

カンボディア国における建設コンサルタント及び測量コンサルタント等は、数が少なく、また経験年数も浅いといわざるを得ない状況にある。

添付資料 1

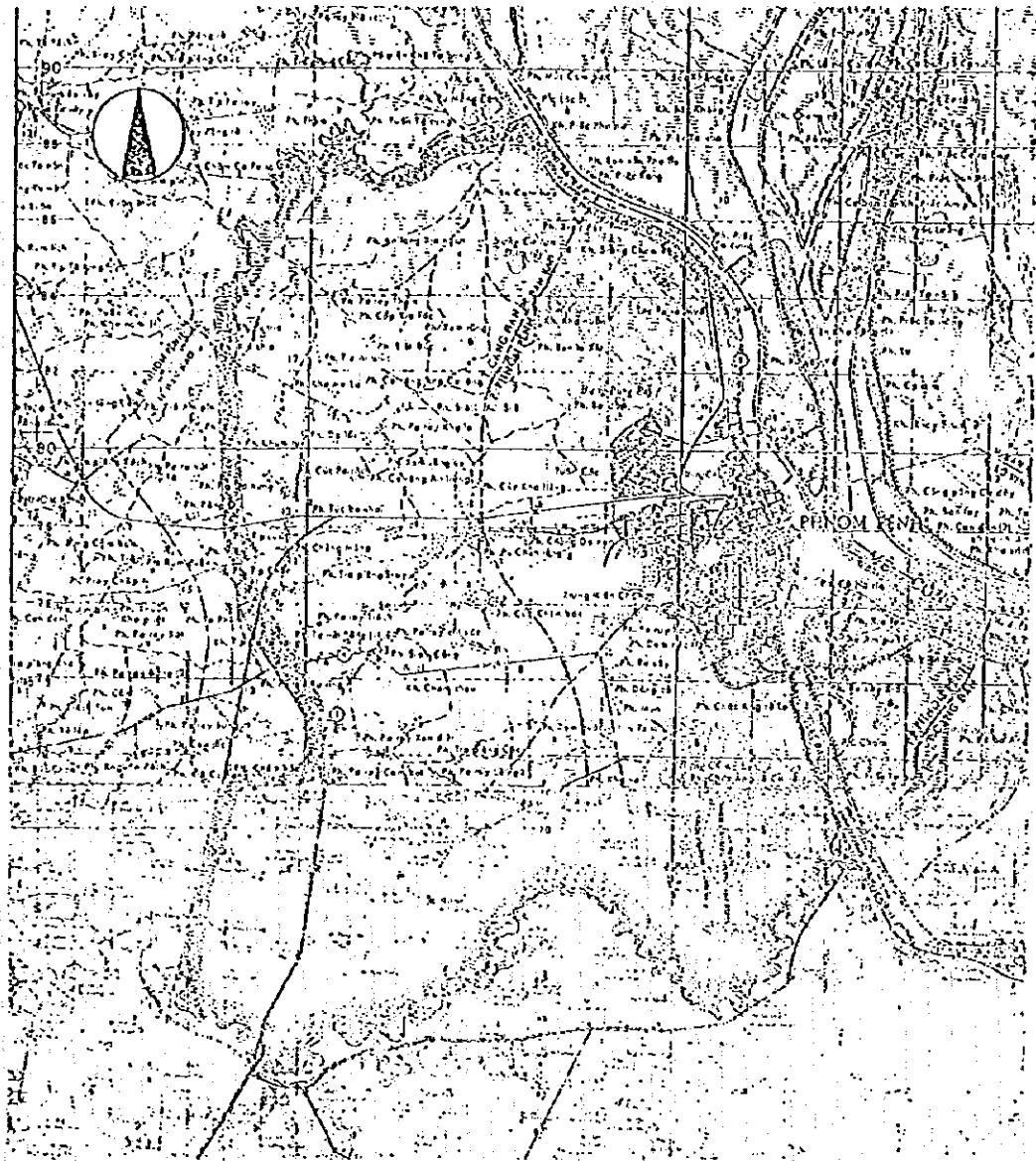
カンボディア国政府要請書



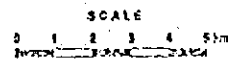
**TERMS OF REFERENCE
FOR
THE STUDY ON
FLOOD CONTROL AND DRAINAGE IMPROVEMENT
FOR THE MUNICIPALITY OF PINOM PENH**

AUGUST 1996

MUNICIPALITY OF PINOM PENH



LOCATION MAP



TERMS OF REFERENCE
FOR
THE STUDY ON
FLOOD CONTROL AND DRAINAGE IMPROVEMENT
FOR THE MUNICIPALITY OF PHNOM PENH
(DRAFT)

1. NECESSITY OF MASTER PLAN AND FEASIBILITY STUDY

The municipality of Phnom Penh, the capital of Cambodia, is suffering from serious and habitual inundation in its political and commercial center as well as densely populated areas (hereinafter referred to as the urban center). This is caused by the insufficient capacity of the existing facilities to drain the storm water in the urban center and the water inflow through the rivers from the outside of the urban center. Since the drainage system receives the waste water as well as storm water, the inundated and stagnant water in the urban center seriously affects the environment and causes health problems to the inhabitants.

The municipality of Phnom Penh with an area of 280 km² extends in the flood plain of the Mekong River and the eastern side of the urban center borders on two (2) tributaries of the Mekong River, namely the Sap River (Tonle Sap) and the Bassac River (Tonle Bassac). The urban center is protected from the flood water of these rivers by river dikes and from the flood water coming from paddy field/marsh by elevated roads which function as ring dikes. The gates installed in the dikes and roads play a role in controlling the water inflow into the urban center.

Storm water as well as waste water in the urban center is collected/conveyed through drainage pipes/channels and then drained outside by seventeen (17) outfalls with flash-board weirs to the Sap and the Bassac rivers and by eight (8) drainage pumps to the paddy fields/marsh areas.

For the drainage of an area where the gravity drainage can be made by gate operation, drainage pipes and outfalls were installed from the end of the 19th century to the beginning of the 20th century. In the remaining lower areas, drainage pipes/channels were extended from 1950 to 1970 and pumping stations were constructed from 1960 to 1970.

The social upheavals throughout the 1970s stopped further extension of the drainage system and the abandonment of urban areas which started in 1975 completely devastated the drainage system of Phnom Penh.

The present regime commenced in However, the persistent lack of funds makes it impossible to install a new system in the some portions of the urban center where the old system is undersized as well as in other areas where a drainage system is not yet established or insufficiently installed.

Moreover, because of the poor maintenance the last 20 years or more, the existing pipes/channels and outfalls have been heavily silted or damaged. Some weirs, which are not functioning, are closed by sand to prevent adverse flow when the water level of the rivers rises high.

Most of the pumping stations heavily or completely deteriorated due to the lack of spare parts. Eight (8) retarding/pre-settling ponds, from which the water is pumped up, have decreased their retention capacity due to the siltation.

To alleviate the serious and recurring inundation and the environmental problem mentioned above, urgent rehabilitation of the existing drainage system should be done. A master plan should also be formulated in consideration of the future development of Phnom Penh. The master plan should cover flood control aside from drainage, because the over banking water especially from the Sap or the Bassac river may bring about tremendous damage, when it occurs.

The master plan should involve measures against pollution to the surrounding areas of the two (2) rivers and paddy fields/marshes. Following the formulation of the master plan, a feasibility study should be carried out for the priority areas/projects selected from the master plan. The present condition of sewerage system will be resultantly improved by the implementation of the drainage system improvement.

2. Description of the Study

2.1 Study Area

The study area shall cover the urban center of the municipality of Phnom Penh with area of 2,800 ha. and the surrounding areas and rivers which may give an influence to the inundation in the urban center.

2.2 Objective of the Study

The objectives of the Study are as follows:

- (1) To formulate a master plan of flood control and drainage system for the urban center of Phnom Penh and its vicinity with proper environmental consideration;
- (2) To carry out a feasibility study for areas/projects which are finally selected as the most urgent targets of flood control and drainage system improvement;
- (3) To propose preliminary scope of the urgently required retrieval of the existing drainage facilities; and
- (4) To upgrade the technical capability of the Cambodian staff concerned.

2.3 Institutional Framework

The implementing agency for the study is the Municipality of Phnom Penh (Drainage and Sewerage Department, Transport Communication and Public Works). Technical assistance is expected to be provided by overseas aid. Coordination and cooperation with related agencies will be managed by the Drainage and Sewerage Department.

3. Scope of Services

3.1 Plan of Operation

The major plan of operation shall involve the following:

(1) Review of Related Studies and Plans

All studies and plans related to flood control and drainage/sewerage projects in the study area will be reviewed and evaluated to identify problems, and the main points which require additional survey and investigation will be sorted out.

(2) Collection of Data and Information

Data and information concerning the following items will be collected.

- (a) Topographic map and previous survey;
- (b) Soil and geological conditions;
- (c) Meteorology and hydrology;
- (d) National and regional socioeconomy;
- (e) Land use and assets in the study area;
- (f) Existing structures for flood control, other riparian structures and drainage/sewerage system;
- (g) Development plans for urban area, industries, agriculture, and roads;
- (h) Inundation condition and damages;
- (i) Water quality; and
- (j) Environmental condition of the study area.

(3) Execution of Survey and Investigation

The items specified below shall be covered by the survey and investigation required for the study.

- (a) Aerophotogrammetry and mapping of the study area (Scale: 1:5,000; contourline interval: 0.5 m);
- (b) Longitudinal profiling and cross-sectional survey along the embankment of the Sap and the Bassac rivers;
- (c) Longitudinal profiling and cross-sectional survey along the roads which functions as ring dikes;
- (d) Longitudinal profiling and cross-sectional survey along the open channels;
- (e) Topographical survey at the proposed sites of major structures (Scale: 1:200 approx.); and

- (f) Geological and soil mechanics investigation at the proposed sites of major structures.

(4) Studies and Analyses

This will cover the studies and analyses required in formulating the flood control and drainage system improvement and shall consist of:

- (a) Hydraulic and hydrological study;
- (b) Study on problems of the existing flood control and drainage system;
- (c) Analyses of existing and future land use and flood damage in the study area;
- (d) Analysis of the national and regional socioeconomy;
- (e) Analyses of the environmental conditions in the urban center and surrounding areas;
- (f) Study on existing structures and design standards applied in Cambodia;
- (g) Analyses of construction unit costs required for flood control and drainage system improvement plan; and
- (h) Comparative study on alternatives to select the optimum flood control and drainage system improvement plan, etc.

(5) Formulation of Master Plan of Flood Control and Drainage System Improvement, and proposal for preliminary scope of the urgently required retrieval of the existing drainage facilities

(6) Feasibility Study on Urgent Project

The feasibility study shall cover the following:

- (a) Alternative plan of flood control and drainage system improvement;
- (b) Technical analysis of optimum plan;
- (c) Preliminary design and cost estimate of optimum plan; and
- (d) Justification of the project (economic evaluation, financial availability and environmental assessment).

(7) Transfer of Knowledge

Transfer of technical knowledge shall be effected as herein described.

- (a) Technical assistance in carrying out the necessary survey and investigation through on-the-job training to government counterpart staff assigned to the Study; and
- (b) Training in an overseas country for the selected government staff to obtain a wider knowledge on modern practices and techniques related to the project.

3.2 Reporting

The reports to be prepared, submitted and discussed during the Study are as follows:

(1) Inception Report

This report shall be submitted in twenty-five (25) copies within two (2) months after commencement of the Study. It shall present the comments and/or suggestions on previous data and study reports, and summarize findings and technical problems encountered through the field survey.

(2) Progress Report I

This report shall be submitted in twenty-five (25) copies within six (6) months after commencement of the Study. It shall give a summary of the Study Team's activities, technical problems encountered, deviations from the original scope of works/services and schedule, proposal for preliminary scope of urgently required retrieval of the existing drainage facilities, and the program of work for the next study period.

(3) Progress Report II

This report shall be submitted in twenty-five (25) copies within eleven (11) months after commencement of the study. It shall give a summary of the Study Team's activities, technical problems encountered, deviations from the original scope of works/services and schedule, and the program of work for the next study period.

(3) Interim Report

This report shall be submitted in twenty-five (25) copies within fifteen (15) months after commencement of the Study, giving all the results of the review, survey, investigation and analyses so far undertaken.

(4) Draft Final Report

This report shall be submitted in fifty (50) copies within twenty-one (21) months after commencement of the Study, presenting the flood control and drainage system improvement plan, including feasibility of selected priority areas/projects. Comments from the government on this report will be given to the Study Team within one (1) month after receipt of the report.

(5) Final Report

The Final Report shall be submitted in fifty (50) copies at the completion of the services, giving all the results of the Study.

3.3 Study Schedule

The Study is to be carried out within twenty-three (23) months, as shown in Fig. 1.

3.4 Expertise Required

A total of 130 man-months of expert services may be required for the Study. The expertise and length of service of each expert are as follows:

Item No.	Designation	Man-Month
1	Team Leader	21
2	Flood control and Drainage Planner	21
3	Drainage/River Design Engineer	21
4	Structural Engineer	10
5	Hydrologist	10
6	Geologist	6
7	Geodetic Engineer/Survey Expert	10
8	Institutional Expert	6
9	Construction Planner	5
10	Cost Estimator	5
11	Project Economist	5
12	Environmental Impact Specialist	5
13	Other Specialists (as required)	5

	Total	130
		===

3.5 Equipment

Equipment required for the Study is expected to be provided through overseas aid. A provisional list of such equipment is in Table 1.

4. UNDERTAKINGS OF THE GOVERNMENT OF CAMBODIA

For the smooth and efficient execution of the Study, the Government of Cambodia will undertake the following items, as and when necessary:

- (1) Provision of counterpart personnel which will include a project coordinator who will be responsible for the field survey works, for coordinating activities and for solving problems arising throughout the study period;

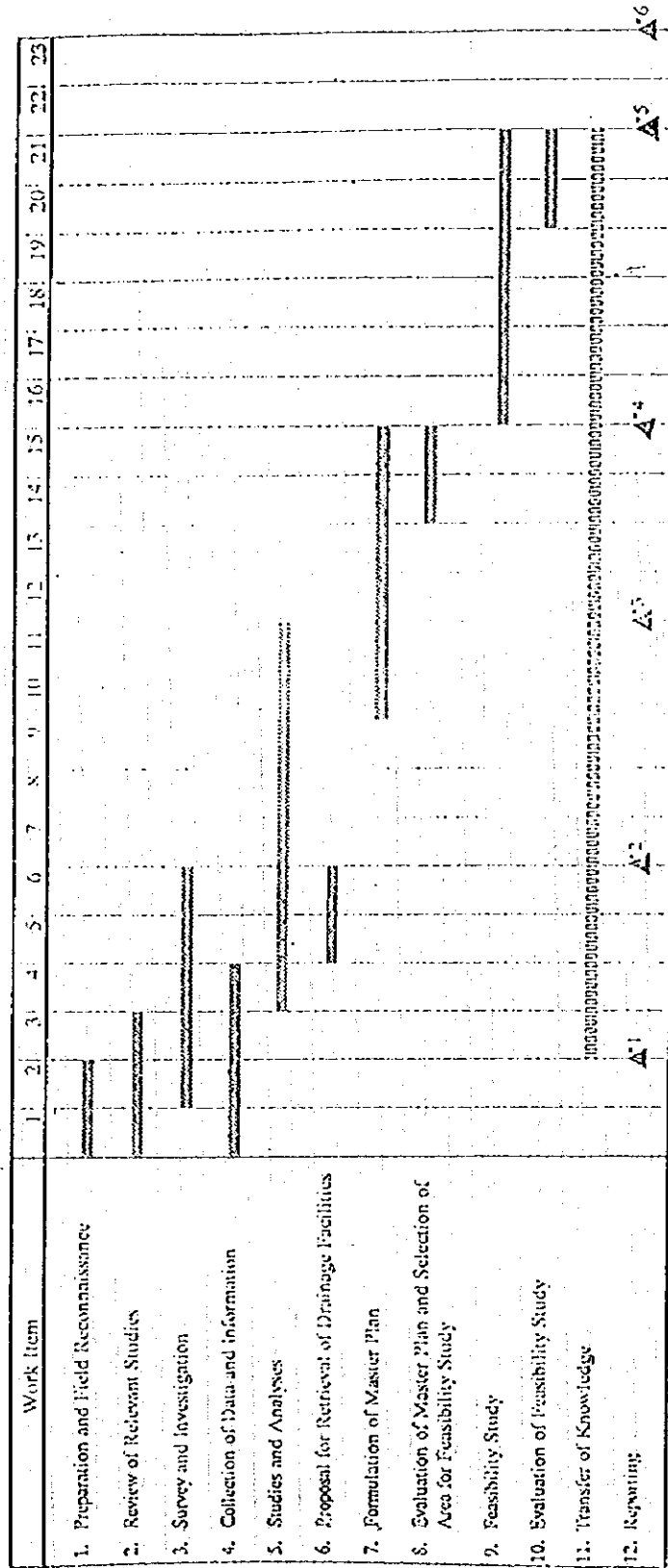
- (2) Arrangements for exemption from import duties, taxes and/or levies on equipment, materials, instruments and personal effects to be brought by the study team into Cambodia, which are necessary for the execution of the Study;
- (3) Provision of sufficient office facilities, suitably air-conditioned and with necessary furniture and fixtures, water and electric supply facilities in the municipality of Phnom Penh;
- (4) Provision of available documents such as reports, drawings, topographic maps, statistical data and information needed for the execution of the Study; and
- (5) Assistance in providing security to life and property of the member of the Study Team during their stay in Cambodia.

TABLE 1. LIST OF EQUIPMENT REQUIRED FOR THE STUDY

Item No.	Name of Equipment	Quantity
1	Electro-Optical Distance Meter	1 unit
2	Transit with Tripod	2 units
3	Level with Tripod	2 units
4	Hand Level	2 units
5	Leveling Staff	4 units
6	Pole	4 units
7	Binoculars	1 set
8	Mirror Stereoscope	1 set
9	Walkie-Talkie	2 units
10	Current Meter	1 unit
11	Drafting Equipment	2 sets
12	Micro-computer	1 set
13	Photocopy Machine	1 set
14	Vehicle	2 units
15	Consumable	1 lot

X-X-X-X-X-X-X-X-X

Fig. 1 STUDY SCHEDULE

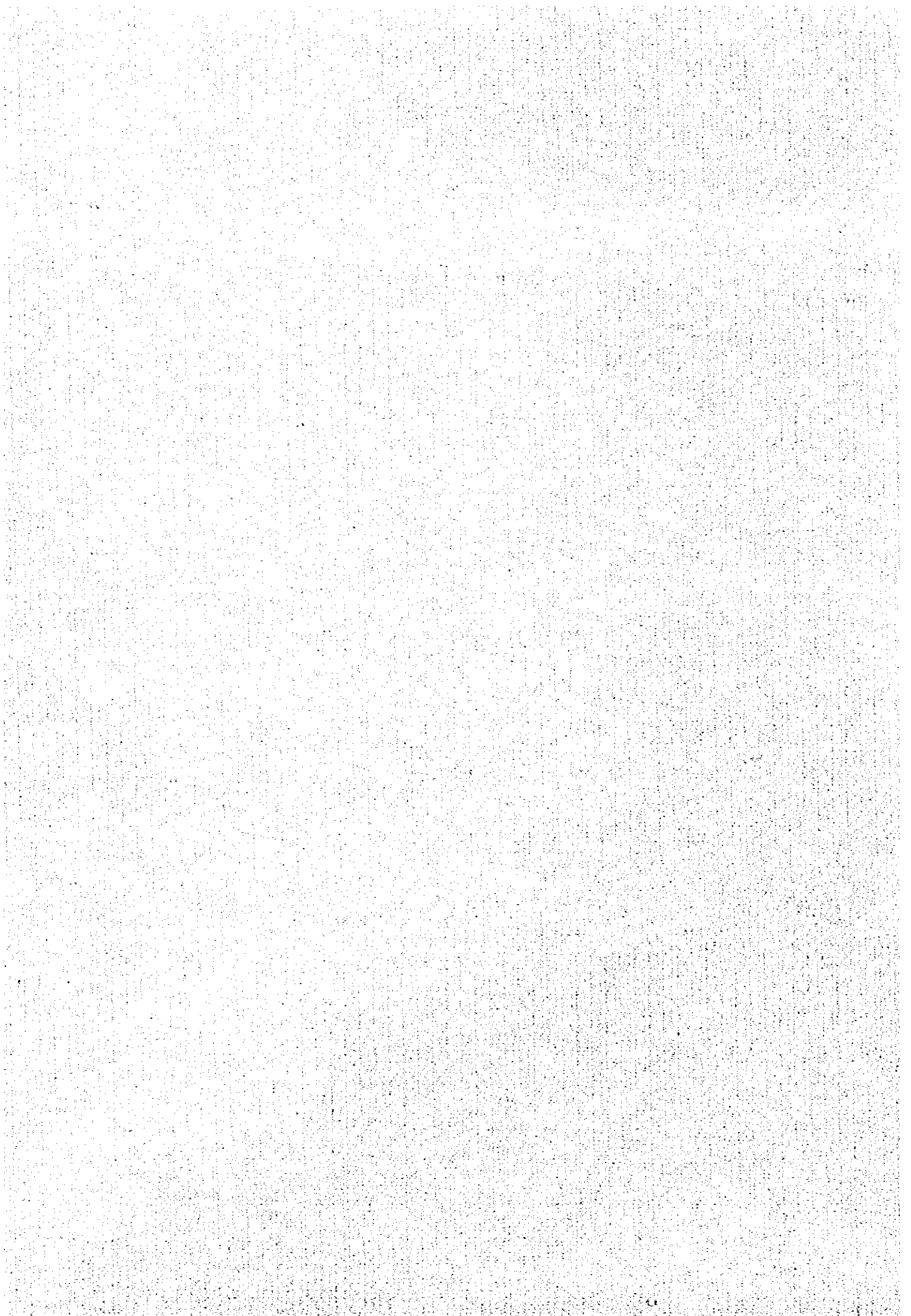


△1 : Inception Report
 △2 : Progress Report (1)
 △3 : Progress Report (2)
 △4 : Interim Report
 △5 : Draft Final Report
 △6 : Final Report

▬ : Continuous Service
 ▬ : Periodical Service

添付資料 2

SCOPE OF WORK



SCOPE OF WORK
FOR
THE STUDY
ON
DRAINAGE IMPROVEMENT AND FLOOD CONTROL
IN
THE MUNICIPALITY OF PHNOM PENH
IN
THE KINGDOM OF CAMBODIA

AGREED UPON BETWEEN
THE MUNICIPALITY OF PHNOM PENH
AND
THE JAPAN INTERNATIONAL COOPERATION AGENCY



For Delegate of the Royal Government of
Cambodia to the Municipality of Phnom Penh
H. E. Mr. Khau Menghean
Vice-Governor of the Municipality of
Phnom Penh

Phnom Penh, March 18, 1997

青木 真

Mr. Makoto AOKI
Leader of the Preparatory Study Team,
Japan International Cooperation
Agency (JICA)

I. INTRODUCTION

In response to the request of the Government of the Kingdom of Cambodia (hereinafter referred to as "the Government of Cambodia"), the Government of Japan has decided to conduct the Study on Drainage improvement and Flood Control in the Municipality of Phnom Penh (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will undertake the Study, in close cooperation with the authorities concerned of the Government of Cambodia.

The present document sets forth the Scope of Work with regard to the Study.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

- (1) to formulate a master plan of drainage improvement and flood control in the Municipality of Phnom Penh with the target year 2010
- (2) to conduct a feasibility study on drainage improvement and flood control for the priority project identified in the master plan study
- (3) to transfer knowledge of the method and management of drainage improvement and flood control to counterpart personnel to the course of the study.

III. STUDY AREA

The study area shall principally cover the urban center of the Municipality of Phnom Penh (approximately 28km²). In addition, the surrounding areas and rivers which may give an influence to the inundation in the urban center shall be also covered.

The study area is shown in the appendix 1.

IV. SCOPE OF THE STUDY

Phase I : Formulation of Master Plan Study

1. Basic Study

- (1) Collection, review and analysis of related data and information
 - a. natural conditions, including meteorological, hydrological, geological data and aerial photos
 - b. laws, regulations, policies and standards
 - c. social and economic conditions
 - d. master plan for urban development and other development plans
 - e. management and organization of drainage system and flood control
 - f. existing drainage, sewerage, flood/inundation control and sanitation facilities
 - g. drainage, sewerage, flood/inundation control and sanitary conditions

- h. on-going and planned projects relevant to the Study
- i. other relevant data and information

(2) Field reconnaissance and Field survey

- a. hydrological observation
- b. topographical and geological reconnaissance
- c. existing drainage, sewerage, flood/inundation control and sanitation facilities
- d. water quality analysis and present condition related to solid waste
- e. flood/inundation water level
- f. land use
- g. urban housing/environment
- h. others

(3) Analysis and examination of the result of basic study

2. Formulation of a Master Plan

(1) Confirmation of planning framework

- a. population projection
- b. land use plan
- c. economic growth
- d. estimation of waste water quantity
- e. flood water level and discharge

(2) Formulation of a Master Plan

- a. establishment of alternatives and selection of the appropriate plans
- b. preliminary design of facilities
- c. non-structural measures
- d. operation and maintenance plan
- e. management and institutional plan
- f. cost estimation and financial plan

(3) Formulation of implementation program

(4) Initial environmental examination(IEE)

(5) Evaluation of the master plan

- a. financial evaluation
- b. economic evaluation
- c. social evaluation

(6) Selection of priority project(s)

Phase II: Feasibility Study on the Priority project(s)

1. Supplemental data collection and analysis
2. Topographic survey and soil survey
3. Confirmation of planning framework

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4. Formulation of plans for the priority project(s)

- (1) design of facility(ies)
- (2) non-structural measures
- (3) cost estimation and financial plan
- (4) operation and maintenance plan
- (5) management and institutional plan

5. Environmental impact assessment(EIA)

6. Project evaluation

- (1) financial evaluation
- (2) economic evaluation
- (3) social evaluation

7. Formulation of implementation plan

V. STUDY SCHEDULE

The study will be carried out in accordance with the tentative schedule as attached in the appendix 2. The schedule is tentative and subject to be modified when both parties agree upon any necessity that arise during the course of the Study.

VI. REPORTS

JICA shall prepare and submit the following reports in English to the Government of Cambodia.

1. Inception Report:

Thirty (30) copies at the commencement of the first field survey in Cambodia. This report will contain the schedule and methodology of the Study as well as outline of the field survey.

2. Progress Report (1):

Thirty (30) copies at the end of the first field survey.

3. Interim Report

Thirty (30) copies at the end of Phase I . This report will contain the results of the Phase I survey and outline of the Phase II study program.

4. Progress Report (2):

Thirty (30) copies at the end of the second field survey.

5. Draft Final Report

Thirty (30) copies at the end of the third field survey. The Government of Cambodia shall submit its comments within one (1) month after the receipt of the Draft Final Report.

6. Final Report:

Sixty (60) copies within one (1) month after the receipt of the comments on the Draft Final Report.

VII. UNDERTAKINGS OF THE GOVERNMENT OF CAMBODIA

1. To facilitate the smooth conduct of the Study, the Government of Cambodia will take the following necessary measures:

- (1) To secure the safety of the Japanese study team (hereinafter referred to as "the Team")
- (2) To permit the members of the Team to enter, leave and sojourn in Cambodia for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees
- (3) To exempt the members of the Team from taxes, duties, fees and any other charges on equipment, machinery and other materials brought into Cambodia for the conduct of the Study
- (4) To exempt the members of the Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study
- (5) To provide necessary facilities to the Team for remittance as well as utilization of the funds introduced into Cambodia from Japan in connection with the implementation of the Study
- (6) To secure permission for the Team to enter into private properties or restricted areas for the implementation of the Study
- (7) To secure permission for the Team to take all data and documents (including photographs and maps) related to the Study out of Cambodia to Japan
- (8) To provide medical services as needed, expenses for which will be chargeable to the members of the Team.

2. The Government of Cambodia shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the Team.

3. Department of Public Works and Transport of the Municipality of Phnom Penh (hereinafter referred to as "DPWT") shall act as a counterpart agency to the Japanese Study Team and also as a coordinating body in relation with other governmental and non-governmental organizations for the smooth implementation of the Study. DPWT shall, at its own expense, provide the Team with the followings, in cooperation with other organizations concerned:

GF

- (1) available data and information related to the Study
- (2) counterpart personnel
- (3) suitable office space with necessary equipment in Phnom Penh
- (4) credentials or identification cards
- (5) an appropriate number of vehicles with drivers.

VII. UNDERTAKINGS OF JICA

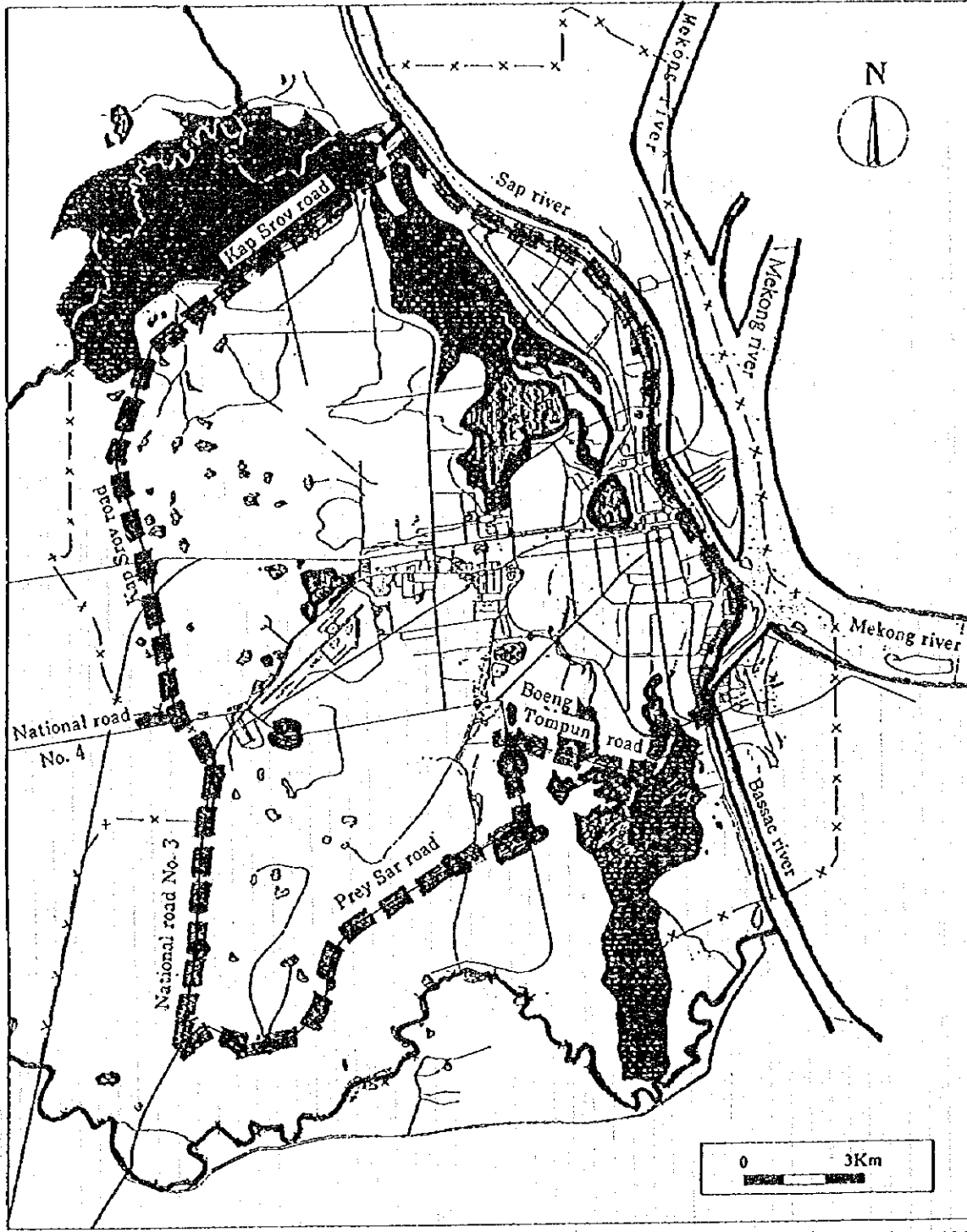
For the implementation of the Study, JICA shall take the following measures:

1. to dispatch, at its own expense, study teams to Cambodia
2. to pursue technology transfer to the counterpart personnel in the course of the Study.

IX. CONSULTATION

JICA and DPWT shall consult with each other in respect of any matter that may arise from or in connection with the Study.

57



- LEGEND**
- STUDY AREA [stippled box]
 - Plan d'eau ou rivière [line with wavy border]
 - Zone humide [dark shaded box]
 - Village [circle]
 - Limite de la commune [dashed line with 'x' markers]

Avril 1995

84

APPENDIX 2

TENTATIVE SCHEDULE

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
DESCRIPTION																			
WORK IN CAMBODIA	▨	▨	▨	▨	▨	▨						▨					▨		
WORK IN JAPAN		▭					▭	▭	▭										
PHASE OF THE STUDY					PHASE 1									PHASE 2					
REPORT PRESENTATION	ICR					PRR(1)					ITR		PRR(2)				DTR		FR

▨ : JICA Study Team's Work in Cambodia

▭ : JICA Study Team's Work in Japan

ICR : Inception Report

PRR : Progress Report

ITR : Interim Report

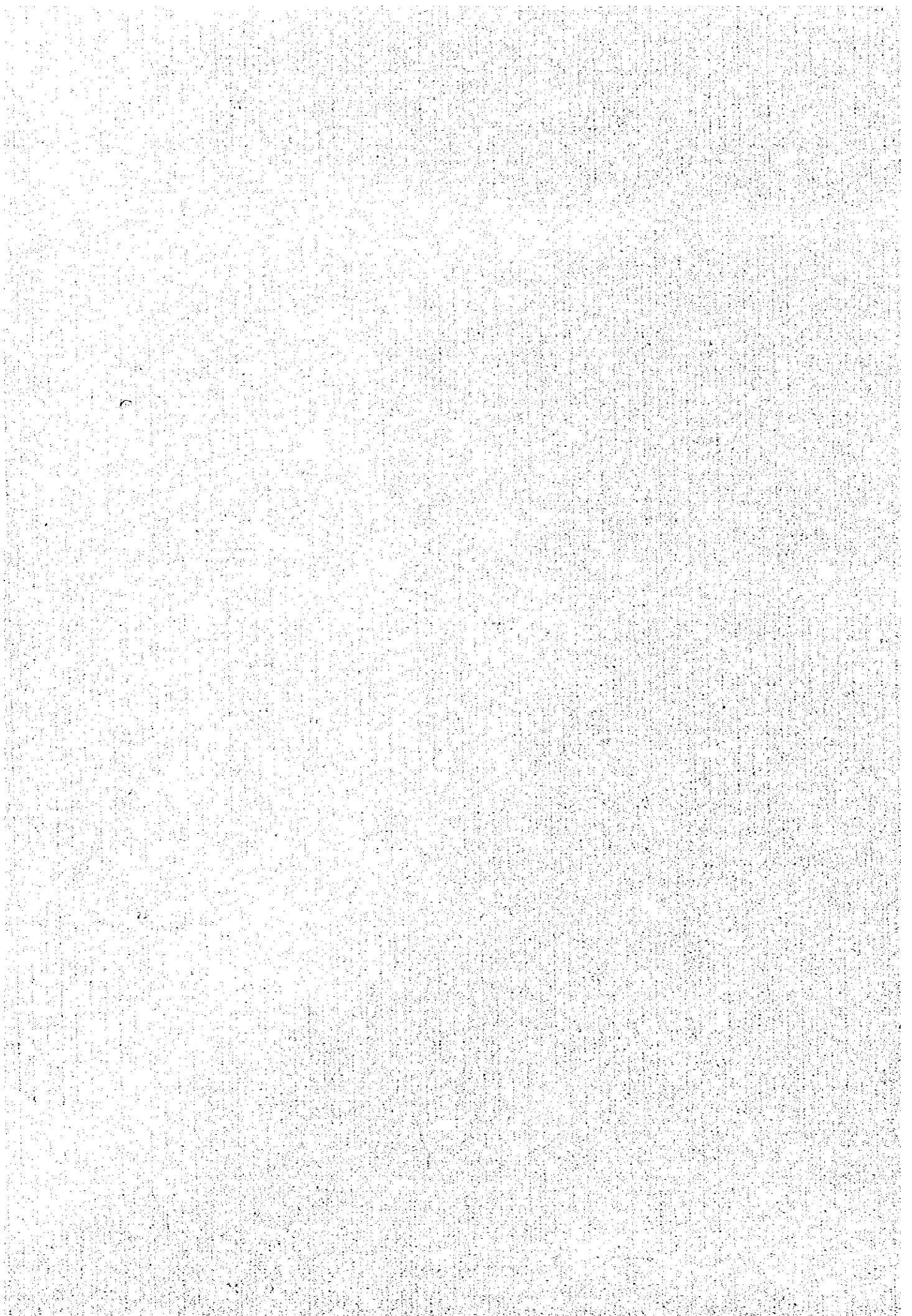
DTR : Draft Final Report

FR : Final Report

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添付資料 3

MINUTES OF MEETINGS



MINUTES OF MEETINGS
ON
SCOPE OF WORK
FOR
THE STUDY ON
DRAINAGE IMPROVEMENT AND FLOOD CONTROL
IN
THE MUNICIPALITY OF PHNOM PENH
IN
THE KINGDOM OF CAMBODIA

AGREED UPON BETWEEN
THE MUNICIPALITY OF PHNOM PENH
AND
THE JAPAN INTERNATIONAL COOPERATION AGENCY



For Delegate of the Royal Government of
Cambodia to the Municipality of Phnom Penh
H. E. Mr. Khau Menghean
Vice-Governor of the Municipality of
Phnom Penh

Phnom Penh, March 18, 1997

青木 真

Mr. Makoto AOKI
Leader of the Preparatory Study Team,
Japan International Cooperation
Agency (JICA)

1. Introduction

In response to the request of the Royal Government of Cambodia (hereinafter referred to as "the Government of Cambodia"), the Preparatory Study Team (hereinafter referred to as "the Team") of the Japan International Cooperation Agency (hereinafter referred to as "JICA") visited Cambodia from March 5 to March 22, 1997 to discuss the Scope of Work (hereinafter referred to as "S/W") for the Study on Drainage Improvement and Flood Control in the Municipality of Phnom Penh (hereinafter referred to as "the Study").

The Team carried out field surveys of the study area and held a series of discussions with the authorities concerned of the Department of Public Works and Transport of the Municipality of Phnom Penh (hereinafter referred to as "DPWT") and other organizations.

The list of attendants is shown in the Appendix.

The Minutes of Meetings have been prepared for the better understanding of the S/W agreed upon between the Municipality of Phnom Penh and the Team on March 18, 1997, summarizing main points of the discussions made in the course of the preparation of the S/W.

2. JICA's Development Study Program

The Team explained JICA's Development Study Program and DPWT fully understood the Program.

3. Signer of Cambodia Side

The Team requested that the signer of Cambodia side would be Delegate of the Royal government of Cambodia to the Municipality of Phnom Penh. DPWT expressed it difficult to agree due to the several situations and the Team recognized the situations. Both sides agreed the signer would be the Vice-Governor of the Municipality of Phnom Penh who takes responsibility for Delegate of the Royal government of Cambodia to the Municipality of Phnom Penh.

4. Study Title

Both sides agreed that the title of the Study would be "the Study on Drainage Improvement and Flood Control in the Municipality of Phnom Penh" as described in the S/W.

5. Target Year

Both sides agreed that the target year for M/P would be set in the year 2010.

6. Study Area

Both sides agreed that the urban center of the Municipality of Phnom Penh consist of 4 districts which are Daun Penh, Tuol Kork, Prampi Makara and Chamkarmon. Both sides also agreed that the study shall cover the area which is nearly encircled by the following roads and rivers.

Roads: (1) Kap Srov road
(2) National road No. 3
(3) National road No. 4
(4) Prey Sar road
(5) Boeng Tompun road

Rivers: (1) Sap river
(2) Bassac river
(3) Mekong river

S J.

7. Counterpart Agency

DPWT shall act as the counterpart agency as described in the S/W.

8. Coordination with Other Ministries and Organizations

The Team requested DPWT to coordinate with other ministries and organizations concerned such as the Ministry of Public Works and Transport, the Ministry of Agriculture, the Ministry of Environment, BAU, ADB, WB, French Agencies to get maximum cooperation from these organizations as well as to avoid any duplicated works. The Team also suggested to establish a steering committee to achieve the above mentioned coordination. DPWT agreed to this point and promised to set up the committee, that the Chairman is the Vice-Governor of the Municipality of Phnom Penh, and invite representatives from relevant ministries and organizations for the smooth implementation of the Study.

9. Undertakings of the Government of Cambodia

- (1) It was confirmed that DPWT would secure the full support and participation of organizations concerned in the course of the Study.
- (2) It was confirmed that DPWT would assign the appropriate number of counterpart personnel to the JICA Study Team covering the following fields. A good command of English is a preferable qualification for the counterpart personnel to ensure smooth communication between the JICA Study Team and counterpart personnel. The number and fields of counterpart personnel will, however, be finalized by DPWT and the JICA Study Team in discussions at the commencement of the Study.
 - a. Supervision
 - b. Hydrology
 - c. Surveying
 - d. Drainage system and Flood Control Planning
 - e. Design of Drainage system and Flood Control Facilities, including cost estimation and construction planning
 - f. Management of Drainage system and Flood Control
 - g. Economy / Financial Analysis
 - h. Environmental Investigation
 - i. Coordination for JICA Study Team
 - j. Others

In addition, the Team suggested that the other department staff in the Municipality of Phnom Penh would be included to counterpart personnel for the effective implementation of the Study.

- (3) The Team requested that DPWT would provide suitable office space with necessary equipment in Phnom Penh, and sufficient numbers of vehicles with drivers for the Study. DPWT replied that the office space enough to work could be prepared by DPWT. DPWT, however, expressed concern that, due to budgetary constraints, it would be hard to provide office equipment and vehicles with drivers. The Team recognized the situation and promised to convey the message to JICA H.Q. for consideration.

10. Counterpart Training

DPWT requested that JICA conduct counterpart training in Japan for the purpose of the smooth transfer of technology during the Study. The Team agreed to convey it to JICA H.Q. for consideration. The training period, training field and selection of personnel shall be mutually

84

discussed after the Study starts.

11. Technology Transfer Seminar

DPWT requested that JICA hold a seminar as a part of the technology transfer in the course of the Study. The Team recognized the necessity and promised to convey the request to JICA H.Q. for positive consideration.

12. Equipment

DPWT requested JICA to provide with necessary equipment for the Study. The Team recognized the necessity and promised to convey the request to JICA H.Q. for positive consideration.

13. Reports

As for the Study reports, DPWT agreed to make them open to the public in order to achieve maximum use of the Study results.

DPWT requested JICA to provide the following copies of reports because of coordination with other ministries and organizations concerned and JICA agreed that the following copies of reports shall be prepared and submitted for better use of the Study results.

- (1) Inception Report: Thirty(30) copies
- (2) Progress Report(1): Thirty(30) copies
- (3) Interim Report: Thirty(30) copies
- (4) Progress Report(2): Thirty(30) copies
- (5) Draft Final Report: Thirty(30) copies
- (6) Final Report: Sixty(60) copies

APPENDIX

LIST OF ATTENDANTS

(Cambodian side)

The Municipality of Phnom Penh

H. E. Mr. Khau Menghean	Vice-Governor of The Municipality of Phnom Penh
H. E. Mr. Chap Nhalyvoud	Vice-Governor of The Municipality of Phnom Penh
Mr. Kim Saysamalen	Deputy Chief of Cabinet
Mr. Keo Savin	Director, Department of Public Works and Transport
Mr. Ean Narin	Deputy Director, Department of Public Works and Transport
Mr. Moeting Sophan	Vice-Chief of Drainage and Sewerage Division, Department of Public Works and Transport
Mr. Chiep Sivorn	Director, Phnom Penh Environment Service
Mr. Ty Yao	Director, Bureau of Urban Affairs
Mr. Phat Leng	Director, Department of Agriculture
Ms. Mom Sandap	Director, Planning of Phnom Penh Municipality
Mr. Nak Tanavuth	Chief, Bureau of International Relations
Mr. Ok Prak	Deputy Director, Department of Cadastral

Council Ministers

Mr. Suong Leang Hay	Advisor
Mr. Chhoeuy Roeun	Staff Member

Ministry of Foreign Affairs and International Cooperation

Mr. Eat Lyheng	Deputy Director, Department of Asia and Pacific
Mr. Sok Chea	Staff Member, Department of Asia and Pacific

Ministry of Economy and Finance

Mr. Pao Sophan	Assistant to the Minister of Economy and Finance
Mr. Chea Sina	Staff Member

Ministry of Agriculture, Forestry and Fisheries

Mr. Veng Sakhon	Deputy Director General, General Directorate of Irrigation, Meteorology and Hydrology
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Ministry of Public Works and Transport

Mr. Mon Sambath	In charge of Road and Bridge, Department of Public Works and Transport
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UNDP

Mr. Om Paul	Technical Advisor
Mr. Teruo Jinnai	Financial Administrative Advisor to the Municipality of Phnom Penh

ADITEM

Mr. Nicolas Mouy	Technical Advisor to BAU
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(Japanese side)

Embassy of Japan

Mr. Yoichi Kakita

Second Secretary

JICA Cambodia Office

Mr. Masatoshi Teramoto

Assistant Resident Representative

Preparatory Study Team

Mr. Makoto Aoki

Leader

Mr. Katsuyoshi Saito

Member

Mr. Kazuhisa Tomita

Member

Mr. Katsuro Soejima

Member

Mr. Yuji Hatakeyama

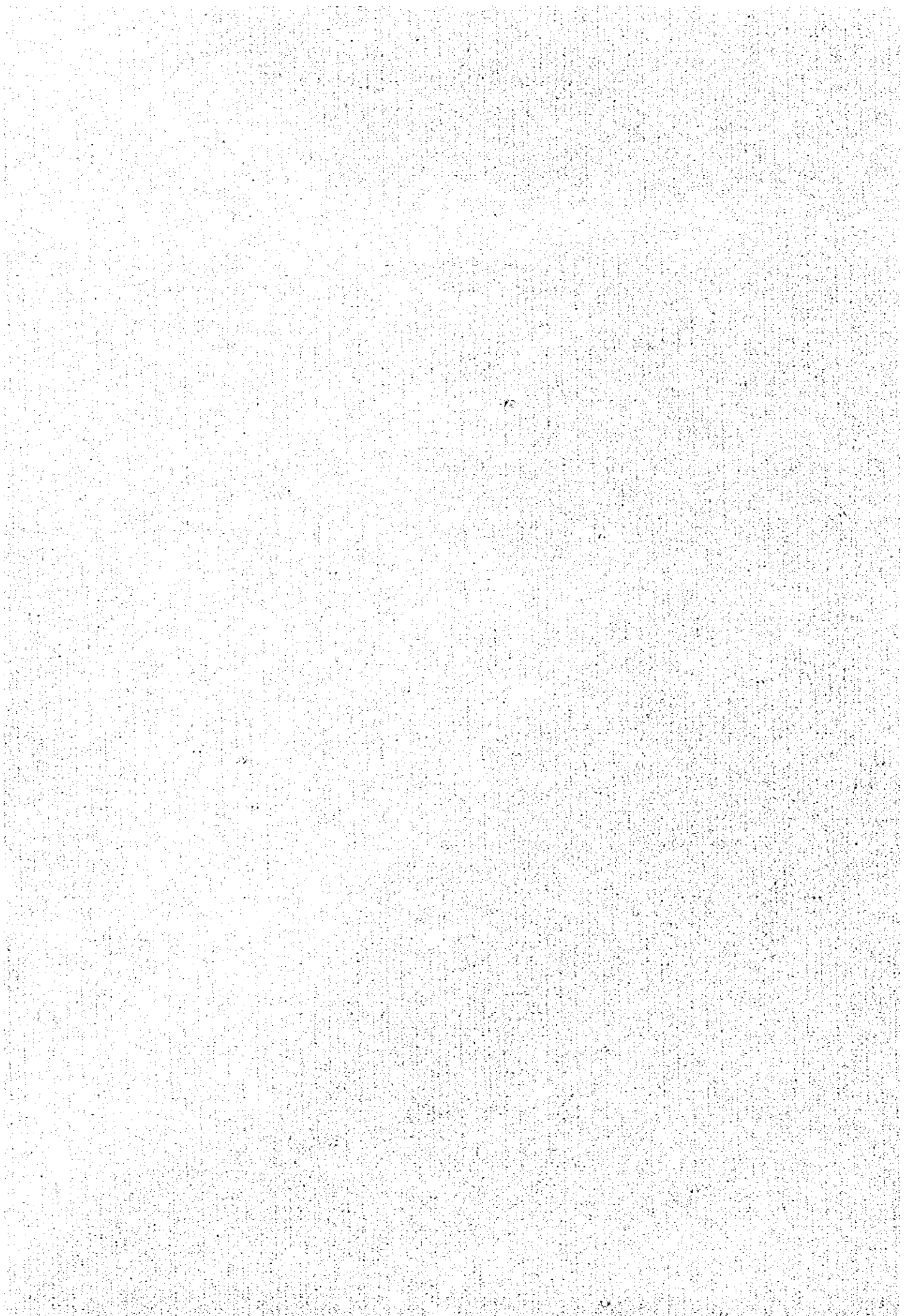
Member

Mr. Mineo Kai

Member

Q. J.

添付資料 4
質問表及び回答



QUESTIONNAIRE

OF

JICA PREPARATORY STUDY TEAM

FOR

A STUDY ON DRAINAGE IMPROVEMENT AND FLOOD CONTROL

IN

THE MUNICIPALITY OF PHNOM PENH

March, 1997

JAPAN INTERNATIONAL COOPERATION AGENCY

The questionnaire is prepared by the Japanese Preparatory Study Team for A STUDY ON DRAINAGE IMPROVEMENT AND FLOOD CONTROL (hereinafter referred to as the Study) so as to obtain basic information and data needed for the Study.

Please answer all the questions in English and attach materials requested in this questionnaire. Answers need not be too much in detail but should be brief and precise.

Thank you for your cooperation.

Note: -Please write Y for the Data/Item in the "Availability" which is available.
 -Please write N for the Data/Item in the "Availability" which is not available.

-If attached materials are not written in English, please write down notes in English on materials for understanding by the mission.

Kindly provide us with further information, if possible.

I. General

Please indicate in writing the items and please explain them in detail.

II. Annual Report Preparation

Please provide some data and reports.

III. Basic Data Collection (1)

Please supply some data to be available.

IV. Conditions of facilities

Please describe in detail and write about conditions of facilities.

V. Drawings of facilities

Please supply the drawings of main facilities.

VI. Local Consultants in Cambodia

Please indicate the names of consultant members.

VII. Water tariff for drainage and sewerage

Please provide the water tariff system.

VIII. Information on survey cost

Please prepare the data.

IX. Law, act and regulations

Please prepare the data and explain.

X. Environmental issues

Please prepare the data and explain.

CNATUC : National Committee of Land Use and Urbanization of Cambodia
MOP : Ministry of Plan
BAU : Urban Affairs Office
DSD : Drainage and Sewerage Division
COM : Council of Ministries
MPPT : Ministry of Public Works and Transport
PPWSA : Phnom Penh Water Supply Authority
MOA : Ministry of Agriculture
MPP : Municipality of Phnom Penh
DCU : Department of Construction and Urbanization of MPP
EDC : Electricity of Cambodia
MIME : Ministry of Industry, Mine and Energy
MOE : Ministry of Environment
MOH : Ministry of Health
GDMEI : General Direction of Meteorology and Hydrology

I. General(1)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
<p>1. Background</p> <p>The relationships between the national development plan and the project, the study on flood control and drainage improvement for Municipality of Phnom Penh, including the priority of the project in the national development plan.</p> <p>(2) The national policy and the project, including the priority of the project in the national policy.</p> <p>(3) The regional/provincial development plan and the project.</p>		Y	CNATUC	One of the National Plan
		Y	CNATUC and MOP	Infrastructure Rehabilitation Policy
		Y	CNATUC and MOP	Included in Master Plan
		Y	S/W	
		Y	S/W	
		Y	MOP	
		Y	DSD	
		Y	COM	
		Y	MPWT	
		Y	BAU	Already given
		Y	PPWPA	
		Y	MPWT	
		Y	MOA	
		Y	JAPAN	Necessary and needed
				To avoid the flood, disease and so forth

I. General (2)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
<p>3. Organization or agency (1) Organization or agency that shall be directly responsible for the study (2) Chart of organization or agency (3) Organization or agency that shall be responsible for the implementation, construction, operation and maintenance of the project (4) Organization that is responsible for the urban development plan (5) Other organizations that are related to the project</p>	<p>1) For the drainage study 2) For the flood control study</p>	<p>Y Y Y Y</p>	<p>MPP MPP MPP DPWT</p>	<p>Already given</p>
<p>4. Present conditions of drainage and sewerage system in the project area (1) Outline of drainage and sewerage system in the project area, including the problems in relation to the surrounding areas (2) Present problems regarding inundation and flood damage and so on (3) Governmental subsidies to the construction, operation and maintenance of drainage and sewerage facilities (4) Tariff (5) Operation and maintenance cost (6) Sewerage groups (organizations) and their functions, numbers, size, if any</p>		<p>Y</p>	<p>DSD</p>	
		<p>Y</p>	<p>DSD, BAU</p>	
		<p>Y</p>	<p>DPWT</p>	
		<p>Y</p>	<p>MPP DSD DSD</p>	<p>Already submitted to COM (about 10 % of water bill)</p>

I. General (8)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
(7) Water supply in the project area. including both present condition and future plan		Y	P.P.WSA	
(8) Power supply in the project area. including both present condition and future plan		Y	EDC	(Company)
(9) Foreign assistance		Y	MPP	

I. Annual Report Preparation

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Annual Report (1) The latest Annual Report on Flood and Inundation		Y	MOA. G.D. of Meteorology and Hydrology ditto. MOP	
2. Year book of Cambodia (Annual Report)		Y		
3. Statistics of Cambodia		Y	MOP	

III. Basic Data Collection (1)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Maps	1) Topographical maps (scales of 1:50,000, 1:10,000, 1:5,000 and so on) 2) Land use map 3) Geological map 4) Hydrological map 5) Drainage/Sewerage map (including canal/pipe, gate/valve, pond/manhole) 6) Inundation/Flood damage map 7) Land subsidence map 8) Land reclamation map 9) Design maps of embankment, road, rail way, canal and pond 10) General map of the project proposed by ADB. 11) General map of the project proposed by WB 12) General map of the project proposed by France 1) Location of stations, meteorological observatories 2) Precipitation (Rainfall) (annual, monthly, daily and hourly) 3) Temperature 4) Humidity 5) Solar radiation 6) Wind (velocity and direction) 7) Evaporation and Evapotranspiration 8) Term of observations for data above	Y	Cadastré of MPP	(Partial (60%))
		N		But there is a TA from ADB for an urban development project plan
		N		(Inner city)
		N		Only inner city for rainy water inundation
		Y	DSD	
		Y	DSD	
		N	(Ongoing of discussion)	
		N		Already given
		Y	General Direction of Meteorology & Hydrology	
		Y	ditto	
		Y	ditto	
		N		
Y				
Y				
Y				
Y				
2. Meteorological Data and Records		Y		
		Y		
		N		
		Y		
		Y		
		Y		
		Y		
		Y		

II. Basic Data Collection (2)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS	
		AVAILABILITY	PLACE OF DATA AVAILABLE		
3. Hydrological, hydraulic, geological and hydrogeological data and records	1) Water level and discharge of rivers/canals (River Sap and Bassac, and drainage canals) 2) Groundwater level, flow directions and amount of pumping up 3) Geological data (geological profile and map of distribution) 4) Water and wastewater quality 5) Distribution, quantity and quality of solid waste in canals and pipes 6) Brief history on records of damage occurred by overflow from river Sap and Bassac 7) Distribution, term and depth of inundation blocks	Y	BAU & General Direction of Meteorology & MIM (not sure)	Hydrology	
		N			
		N			
		Y	PPWSA	Only drinking water	
		N		National Committee of Natural Cambodia	
		Y		DSD	as above
		N			
4. Natural disaster (1) History of natural disaster	1) Earthquake 2) Strong wind 3) Flood 4) Land slide 5) Inundation 6) Slope failure 7) Debris flow 8) Ground subsidence 9) Mud pumping 10) Wind erosion	Y	G. D. of Meteorology and Hydrology		
		N	ditto		
		Y			
		N			
		Y			
		N			
		N			
		N			
		N			
		N			

III. Basic Data Collection (3)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
5. Others	1) Staff members and Organization chart of DPWT of MPP 2) Urgent maintenance plan/project especially for inundation areas 3) Delineation of Service area at target year, in year 2010	Y	DPWT	Not yet implemented Study area
		Y	ADB, WB, BAU, JAPAN, FRANCE	
		Y	S/W	

N. Conditions of facilities

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Location of facilities (1) Location and histories of drainage and sewerage facilities		Y	DSD	
2. Hydraulic conditions (1) Hydraulic items/conditions of pipes/gates/valves/manholes (2) Hydraulic items/conditions of rivers/canals (3) Boundary conditions of rivers, canals, ring dikes (roads and so on) and ponds (4) Items and conditions of pump equipments and stations		Y Y Y N Y	DSD, BAU G.D. of Meteorology and Hydrology, BAU, DSD DSD	
3. Function of facilities (1) Dimensions and capacities of existing canals, pipes, gates, valves, manholes, pump stations, ponds and so forth (2) Existing functions of facilities mentioned above (3) Degree of damage of facilities mentioned above (4) Items and specifications of rehabilitations for existing facilities		Y Y Y	DSD DSD DSD	
4. Operation and maintenance (1) Operation and maintenance system for existing facilities (2) Records of O/M		Y Y	DPWT & DSD DSD & DPWT	

V. Drawings of facilities

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Sections and profiles of rivers and ponds (1) River Sap and Bassac (2) Ponds (regulating ponds against flood discharge) 2. Standard drawings of Drainage and Sewerage systems (1) Canals and pipelines (2) Pump stations, gates (outlet forward river) and manholes (3) Operation and maintenance facilities and so on		Y	MPWT, MOA, G.D. of Meteorology and Hydrology.	
		Y	DSD	For inner city
		N		
		N		
		N		

V. Local Consultants in Cambodia

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Names of consultant members who have experienced (1) Works of planning and facility design for drainage, sewerage and flood control. (2) Survey and works of investigations of functions of drainage and sewerage facilities.		N		Unknown
		N		

V. Water tariffs for drainage and sewerage

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Water tariff system of billing and collection		Y	PPWSA	

W. Information on survey cost

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
(1) Survey cost		Y	MPWT. DOC	
(2) Organizations capable of measurement/ test, including bore hole drilling cost per meter		Y	MPWT	
(3) Topographical map survey cost		Y	MPWT. MOA. DOC	

X. Law, act and regulations

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
(1) Water laws (international and domestic)		Y	CNATUC	
(2) Land law		Y	CNATUC	
(3) Facility design standard		N		
(4) Consultants and constructors		N		

X. Environmental issues (1)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
<p>1. Legislation related to environmental policies and standards</p> <p>(1)Responsible ministry or agency</p> <p>(2)Laws/guidelines</p> <p>(3)Environmental quality standards including emission/effluent standards</p> <p>- Standard values and penalties</p> <p>- Monitoring system and its responsible agency</p> <p>(4)Laws/guidelines related to environmental impact assessment(EIA)</p>	<p>1)air pollution</p> <p>2)water pollution</p> <p>3)soil pollution</p> <p>4)noise</p> <p>5)vibration</p> <p>6)offensive odor</p> <p>1)Type/size of activities for EIA</p> <p>2)Procedure</p>	<p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>N</p> <p>Y</p> <p>Y</p> <p>Y</p>	<p>MOE</p> <p>MOE</p> <p>MOE</p> <p>MOE</p> <p>MOE</p> <p>MOE</p> <p>MOE</p> <p>MOE</p> <p>MOE</p> <p>MOE</p> <p>MOE</p> <p>COM</p> <p>COM</p>	
<p>2. International conventions on environmental conservation</p>	<p>1)Affiliation to bilateral or multi-lateral conventions</p> <p>2)Names of conventions and the date of affiliation, if any</p>	<p>Y</p> <p>Y</p>	<p>MOE, COM</p> <p>MOE, COM</p>	
<p>3. Present situation of the proposed project sites</p> <p>(1) Socio-economic environment</p>	<p>1)Plan of resettlement, if any (number of people to be resettled) (compensation)</p> <p>2)Experience of resettlement in previous projects, if any</p> <p>3)Main industry or source of income of residents</p> <p>4)Distribution of schools, hospitals, etc. (public facilities)</p> <p>5)Cultural property or archaeological sites</p>	<p>N</p> <p>N</p> <p>Y</p> <p>Y</p> <p>Y</p>	<p>MINE</p> <p>MPP, Concerned Ministry</p> <p>GNATUC</p>	

X. Environmental issues (2)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
(2) Natural environment	6) History of epidemic disease	Y	MOE	
	7) Solid waste collection/disposal system and waste water treatment system	Y	MPP	
	1) Location of particular areas officially protected such as national parks and natural parks	Y	CNATUC, MOE	
	2) Location of environmentally vulnerable areas such as mangrove forest and wetland	Y	CNATUC, MOE	
	3) Species of precious animals and plants in the area	Y	CNATUC, MOE	
	4) Distribution of important historical spots, landscape and scenery	Y	CNATUC, MOE	
	1) Present conditions of air quality, water quality, soil contamination, noise and vibration	N		
(3) Quality of life	2) Number of pollution grievances	N		
	3) Environmental education	N		
4. Consultants and surveyors	1) List of registered consulting firm in and actual results and terms of :	Y	MOE CDME	
	2) Cost of investigation and survey	Y	MOE	
(3) Bidding rate for consultants		Y	CDME	
		N		
		N		

Request for site investigation in both the project and surrounding areas.

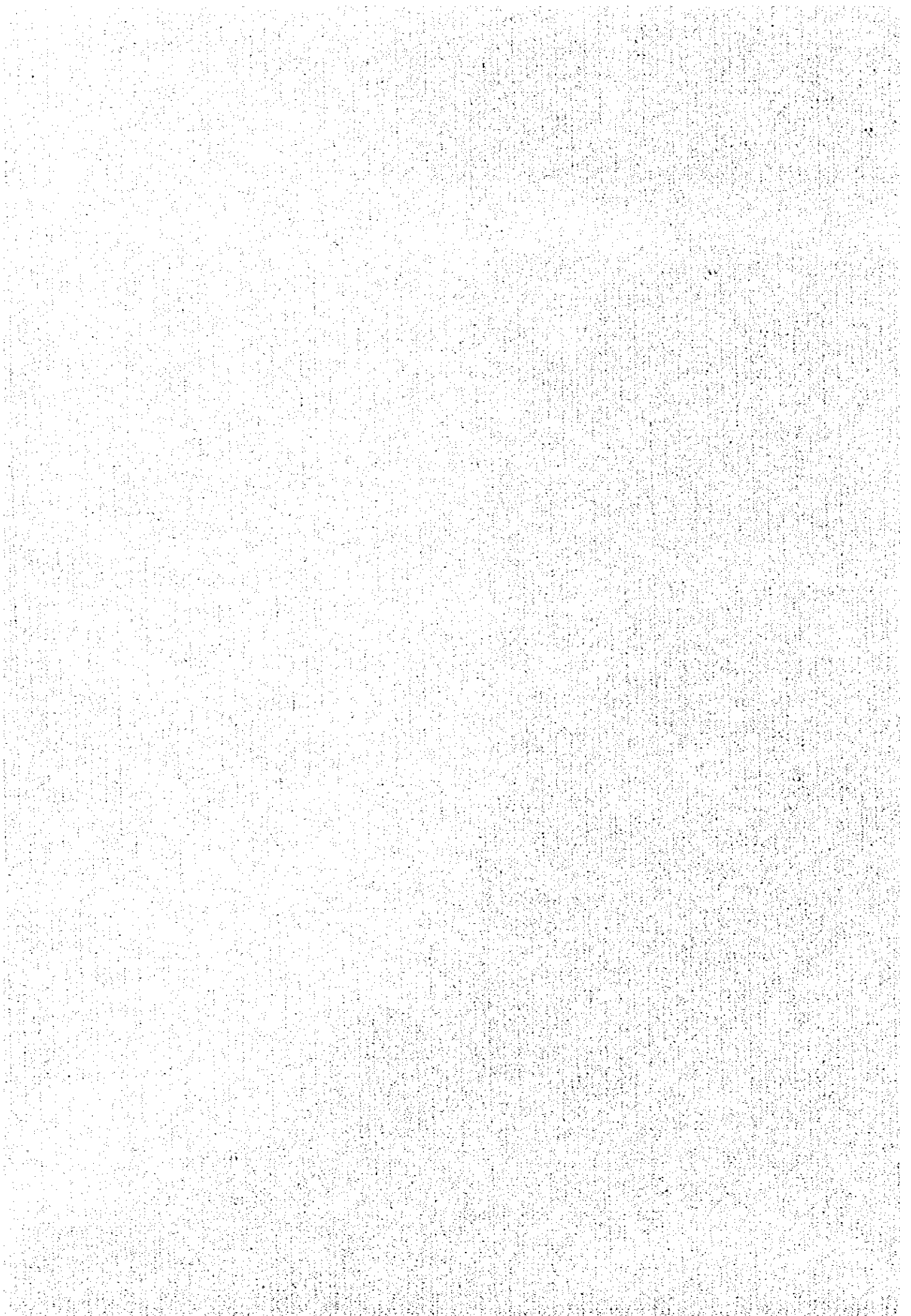
Please show us following facilities and please explain in detail at each site .

1. Blocks inundated usually
2. Pre-settling ponds and pumping stations
3. Clogged canals , pipes , gates , manholes and so forth
4. The most seriously suffered area by storm water
5. The most seriously suffered area by wastewater
6. The most seriously suffered area by solid waste
7. The most polluted canals and pipes by wastewater
8. Sewerage treatment plan near Olympic Stadium
9. Workshop for construction and O/M
10. Embankment against flood intrusion and inundation extension , ring dikes
11. Facilities and structures for flood control in River Sap and Bassac
12. Water treatment plant and intake facilities
13. Land reclamation and reservoirs , flood regulating ponds

Request for joint screening and scoping with your environmental engineer.

Please refer to the attached screening and scoping formats.

添付資料 5
主要面会者リスト

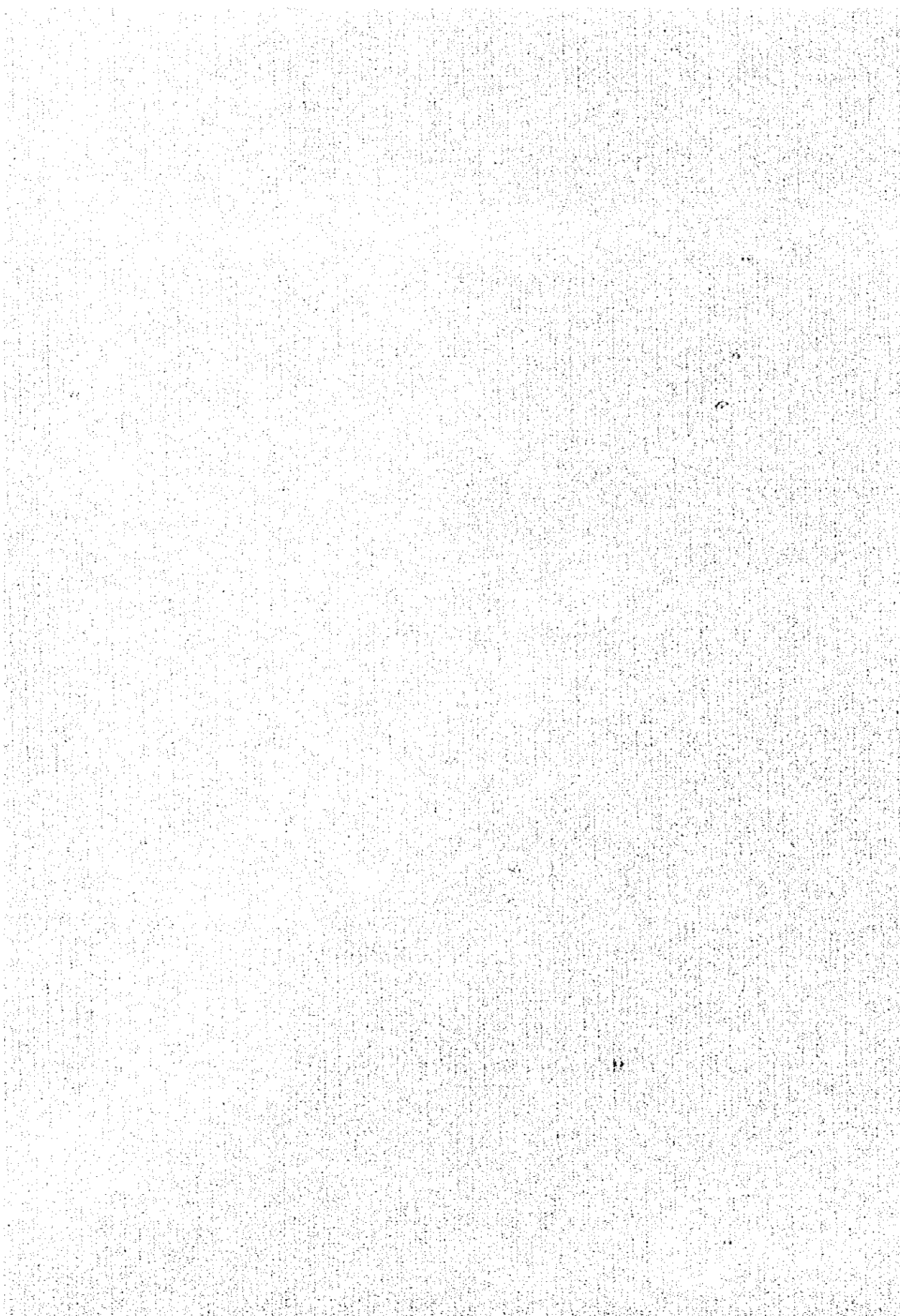


主要面会者リスト

H. E. Mr. Vann Molyvann	State Minister
The Municipality of Phnom Penh	
H. E. Mr. Khau Menghean	Vice-Governor of The Municipality of Phnom Penh
H. E. Mr. Chap Nhalyvoud	Vice-Governor of The Municipality of Phnom Penh
H. E. Mr. Kry Beng Hong	Vice-Governor of The Municipality of Phnom Penh
Mr. Kim Saysamalen	Deputy Chief of Cabinet
Mr. Keo Savin	Director, Department of Public Works and Transport
Mr. Ean Narin	Deputy Director, Department of Public Works and Transport
Mr. Moeung Sophan	Vice-Chief of Drainage and Sewerage Division, Department of Public Works and Transport
Mr. Chiep Sivorn	Director, Phnom Penh Environment Service
Mr. Ty Yao	Director, Bureau of Urban Affairs
Mr. Phat Leng	Director, Department of Agriculture
Ms. Mom Sandap	Director, Planning of Phnom Penh Municipality
Mr. Nak Tanavuth	Chief, Bureau of International Relations
Mr. Ok Prak	Deputy Director, Department of Cadastral
Mr. Doung Chansatath	Civil Engineer, Drainage and Sewerage Division, Department of Public Works and Transport
Council Ministers	
Mr. Suong Leang Hay	Advisor
Mr. Chhoeuy Roen	Staff Member
Ministry of Foreign Affairs and International Cooperation	
Mr. Tan Bean	Director, Department of Asia and Pacific
Mr. Eat Lyheng	Deputy Director, Department of Asia and Pacific
Mr. Sok Chea	Staff Member, Department of Asia and Pacific
Ministry of Economy and Finance	
Mr. Pao Sophan	Assistant to the Minister of Economy and Finance
Mr. Chea Sina	Staff Member
Ministry of Agriculture, Forestry and Fisheries	
Mr. Veng Sakhon	Deputy Director General, General Directorate of Irrigation, Meteorology and Hydrology
Ministry of Public Works and Transport	
Dr. Yit Bunna	Director of Public Works Research Center

Mr. Mon Sambath	Deputy Director of Road and Bridge, Department of Public Works and Transport
Ministry of Environment	
Mr. Chanrithy Chuon	Deputy Director of Department of Natural Resources Assessment and Environment
ADB	
Mr. Someth Suos	Resident Representative
UNDP	
Mr. Om Paul	Technical Advisor
Mr. Teruo Jinnai	Financial Administrative Advisor to the Municipality of Phnom Penh
ADITEM	
Mr. Nicholas Mouy	Technical Advisor to BAU
APUR	
Ms. Christiane Blancot	Technical Advisor to BAU
DESAIX	
Mr. Guillaume Stetten	Technical Advisor to BAU
Mr. Ly Chin Trong	Technical Advisor to BAU
Embassy of France	
Mr. Dominique Causse	Counselor of Economy and Commercial
JICA専門家	
川合 尚	農業開発・近代化
村上 一夫	施工管理
在カンボディア日本大使館	
内藤 昌平	特命全権大使
塚元 重光	一等書記官
重村 健二	二等書記官
柿田 洋一	二等書記官
JICAカンボディア事務所	
新井 博之	事務所長
榎本 宏	所員
寺本 匡俊	所員

添付資料 6
収集資料リスト



収 入 資 料 リ ス ト (1)

番号	カテゴリ	資料の名称	発行年	地域	言語	形態	版型	ページ数	資料の別	部数	収買先名称又は発行機関	寄贈・購入の別	備考
1	法律	Mekong law report - Cambodia	1997	-	英語	書籍	B5	44	資料	1	Dirksen Flipse Doran & Le	購入	
2	都市計画 法	Law on the country planning, urbanization and construction	1994	-	英語	書面	A4	4	資料	1	JICA/カンボジア事務所	借用後 北-	This law was adopted by the national assembly on May 24, 1994, during its 2nd session of the first legislature.
3	都市計画 法	Decision No.24 on the creation of a national committee for land planning and urbanization of areas surrounding Phnom Penh, towns and provinces in the Kingdom of Cambodia.	1993	-	英語	書面	A4	2	資料	1	JICA/カンボジア事務所	借用後 北-	Council of ministers, royal government of Cambodia. Sechdey samreth (Decision)
4	都市開発	Phnom Penh skeleton development plan	1996	カンボジア	英語	簡易製本	A4	29	資料	1	BAU	寄贈	Proposed terms of reference
5	都市開発	Urban infrastructure rehabilitation and management project	1996	カンボジア 他	英語	簡易製本	A4	211	資料	1	JICA/カンボジア事務所	借用後 北-	The world bank
6	都市開発	Preliminary study on the Phnom Penh outer ring road development project	1996	カンボジア	英語	特許止め	A4	46	資料	1	カンボジア市 Drainage & Sewerage Division	寄贈	Ministry of Construction Infrastructure Development Institute-Japan
7	道路	カンボジア国道資料	1997	-	英語 フランス語	書面	A4	5	資料	1	カンボジア市 Drainage & Sewerage Division	寄贈	

収集資料リスト(3)

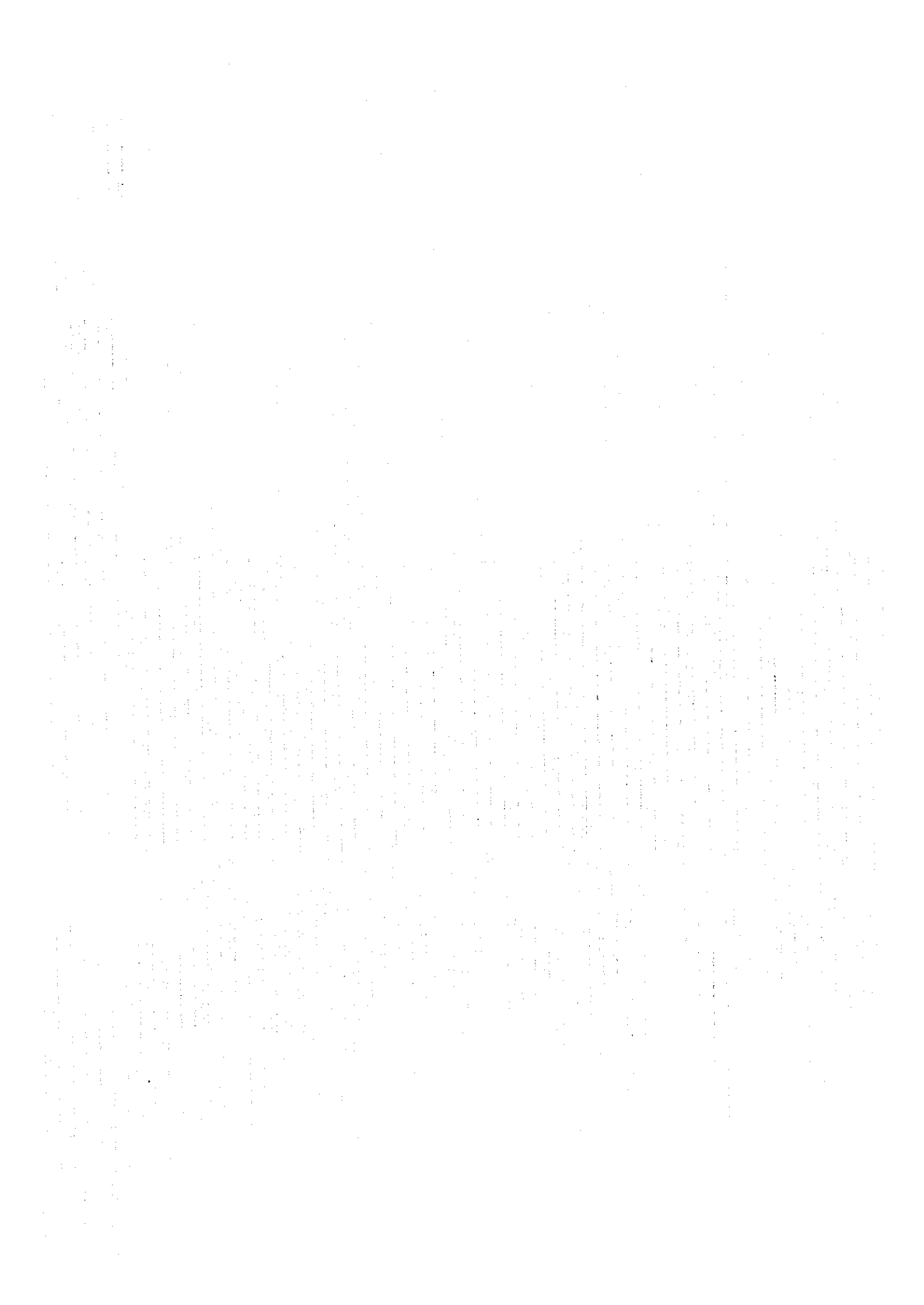
番号	カテゴリ	資料の名称	発行年	地域	言語	形態	版型	ページ数	資料の別	部数	収集先名称又は発行機関	寄贈・購入の別	備考
16	地形図	プノンペン市平面図 S=1/10,000	1995	プノンペン市	クメール語 フランス語	図面	A0	9面	資料	1	プノンペン市 Dept. of Cadastre	購入	市全域が、 フランス航空写真(1993年、 1/15,000)より図化
17	地形図	イデ 773777	1996	プノンペン市	クメール語 フランス語	図面	A4	3面	資料	1	プノンペン市 Dept. of Cadastre	購入	市全域が、 1/2,000 101面 1/5,000 24面 1/10,000 9面
18	図面	Road and Bridge Division, Drainage and Sewerage Division	1997	市庁	英語	書面	A4	2	紙	1	プノンペン市 Drainage & Sewerage Division	寄贈	延陸平面図
19	図面	排水系統図	1997	-	クメール語 英語	書面	A3	1	紙	1	プノンペン市 Drainage & Sewerage Division	寄贈	
20	施設	Waste water and stormwater pumping stations in Phnom Penh city	1997	プノンペン市	英語	書面	A4	2	資料	1	プノンペン市 Drainage & Sewerage Division	寄贈	
21	給水計画	Urban water supply and sanitation project Volume I Executive Summary,ADB	1996	プノンペン市	英語	終了止め	A4	55	紙	1	プノンペン市 Bureau of International Relations	借用後 紙	T.A.No.2280.CAM Final report
22	給水計画	ADB News Release No.111/ 96, 26 September 1996	1996	プノンペン市	英語	終了止め	A4	4	紙	1	ADBカボネ行事務所	寄贈	ADB Lends US\$20 Million to improve Phnom Penh's water supply and drainage.

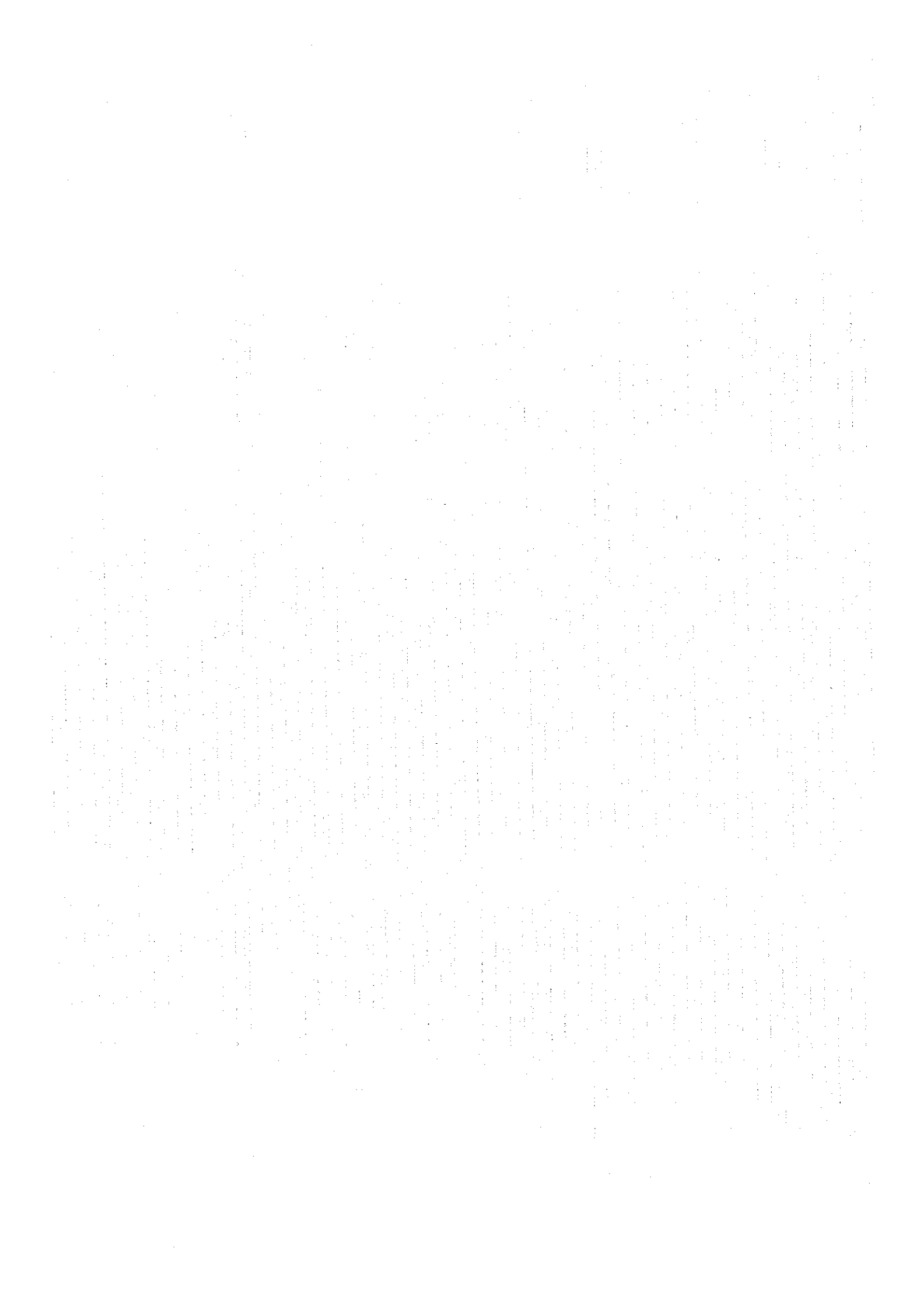
水資源開発プロジェクト (4)

番号	カテゴリ	資料の名称	発行年	地域	言語	形態	版型	ページ数	資料の別	部数	収集先名称又は発行機関	寄贈・購入の別	備考
23	給水計画	Urban water supply and sanitation project Volume 1 Executive Summary, ADB	1996	プノンペン市	英語	特許止め	A 4	55	紙	1	JICAがプノンペン事務所	借用後紙	T.A.No.2280.CAM Final report
24	排水計画	Phnom Penh Drainage Master Plan	1996	プノンペン市	英語	特許止め	A 4	22	紙	1	プノンペン市 Drainage & Sewerage Division	寄贈	8CEOM/COT1 Joint Venture
25	水理	Hydrograph of the Bassac at Chak Tomuk	1997	プノンペン市	英語	書面	A 4	1	紙	1	プノンペン市 Dept. of hydrology	寄贈	1991年、1991年、1994～1996年 水位変動図
26	洪水	Location map of storm water inundation area in Phnom Penh city	1997	プノンペン市	英語	書面	A 4	2	紙	1	プノンペン市 Drainage & Sewerage Division	寄贈	洪水の深さ、継続時間等
27	水理	年間水位変動図	1996	プノンペン市	英語	図面	A 0	1	紙	1	UNDP	借用後紙	1991年、1994～1996年 水位変動図
28	洪水	Lutte contre les inondations	1995	プノンペン市	フランス語	簡易製本	A 4	41	紙	1	UNDP	借用後紙	
29	水理	1996年高水位時図	1996	プノンペン市	フランス語	書面	A 4	7	紙	1	UNDP	借用後紙	
30	水質	水質データ プノンペン市、プノンペン川、メコン川 '96年1月～97年2月	1997	プノンペン市	英語	書面	A 4	3	紙	1	プノンペン市 Dept. of hydrology	寄贈	
31	環境	Country Report	1997	-	英語	書面	A 4	4	紙	1	環境省	寄贈	By Mr. Chuon Chanrithy

収集資料リスト(5)

番号	カテゴリ	資料の名称	発行年	地域	言語	形態	版型	ページ数	資料番号 JICAの別	部数	収集先名称又は発行機関	寄贈・購入 の別	備考
32	環境法	Law on environmental protection and natural resource management	-	-	英語	書面	A4	7	JICAの別 JICA事務所	1	JICAの別 事務所	借用後 JICA	Kingdom of Cambodia Nation-Religion-King
33	環境法	Royal decree on the protection of natural areas	1993	-	英語	書面	A4	3	JICAの別 JICA	1	JICAの別 事務所	借用後 JICA	Cabinet of the head of state Kingdom of Cambodia Reach-kret (Royal decree)
34	環境法	Declaration No.1033 on the protection of natural areas	1994	-	英語	書面	A4	2	JICAの別 JICA	1	JICAの別 事務所	借用後 JICA	Ministry of environment. Royal government of Cambodia Prakas (Declaration)
35	環境法	Decision No.65 on the annulment the existing procedure for timber export	1994	-	英語	書面	A4	1	JICAの別 JICA	1	JICAの別 事務所	借用後 JICA	Council of ministers Royal government of Cambodia Sechdey Samrech (Decision)
36	環境法	Declaration of the royal government of Cambodia on the ban of logs and sawn timber export from the Kingdom of Cambodia	1996	-	英語	書面	A4	2	JICAの別 JICA	1	JICAの別 事務所	借用後 JICA	
37	環境問題	カンボディアの環境問題	1997	-	日本語	資料止め	A4	44	JICAの別 JICA	1	JICAの別 事務所	借用後 JICA	
38	その他 情報	Location map of project area of ADB project (1997-2001)	1997	フノム ペン	英語	書面	A3	1	JICAの別 JICA	1	フノム市 Drainage & Sewerage Division	寄贈	
39	社会	Guide to living in Phnom Penh	1997	フノム ペン	英語	書籍	A5	80	JICAの別 JICA	1	Women's inter- national group	購入	







JICA